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EDINBURGH MEDICAL JOURNAL

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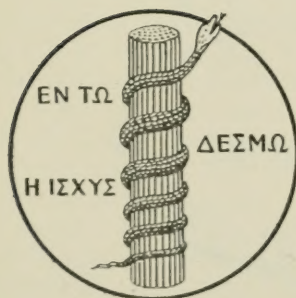
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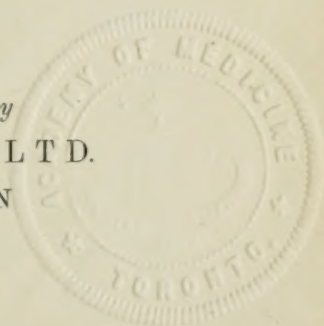
*NEW SERIES*

*VOL. XIX*

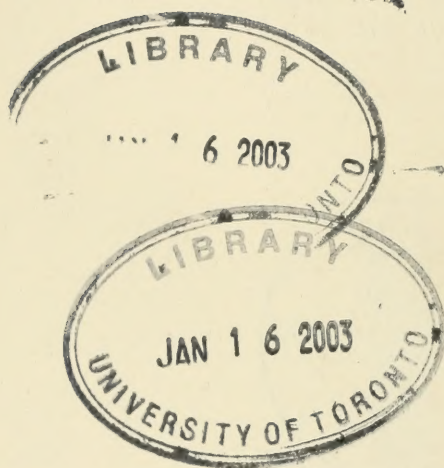


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EDINBURGH AND LONDON

1917







# EDINBURGH MEDICAL JOURNAL.

## EDITORIAL NOTES.

### The Crusade against Venereal Disease.

THE Local Government Board for Scotland is losing no time in putting into operation the agencies that have been devised for the diagnosis, treatment, and prevention of venereal diseases. A further circular, dated 1st June, directs the attention of local authorities to the urgency of the problem, and expresses the hope that local authorities who have not already done so will use every expedition in the preparation of their scheme. Fortunately the warning issued by the Royal Commission, that the demobilisation of the Army will be attended with an increase in the incidence of venereal disease in this country, has not gone unheeded, and most local authorities are engaged upon schemes to meet the situation. We have reason to believe that the Corporation of Edinburgh, acting in co-operation with the hospital authorities and the heads of the medical corporations, are busy adjusting the scheme formulated by the Medical Officer of Health for the City, and that the arrangements are already well advanced.

In their latest circular the Local Government Board clear up a number of points about which there has been some doubt. With regard to the collection of pathological specimens for diagnostic purposes, *e.g.* blood for the Wassermann test, they do not authorise local authorities to pay fees to private medical practitioners for this work. Outfits for the purpose will, however, be supplied to practitioners gratuitously, and a uniform payment of sixpence for every specimen sent to the laboratory should be paid by the local authority to cover the practitioners' out-of-pocket expenses in transmitting the specimen. When the private practitioner is unable to obtain a specimen the patient should be sent to a treatment centre or laboratory. In exceptional cases where this is not practicable the Medical Officer of Health will arrange that a competent person should visit the patient at his home for this purpose.

With regard to the treatment of patients in their homes, it is the Board's intention that the normal course should be for the patient to attend at a treatment centre, where everything necessary for his treatment will be provided free of charge. In exceptional cases where

this is impracticable the local authority should make arrangements for providing treatment at the patient's home, such treatment to be carried out by the medical officer of the treatment centre or by some other specialist appointed under the scheme. The Board will not allow grants towards the payment of fees by the local authority to private practitioners for attendance on such cases.

Salvarsan and its approved substitutes—kharsivan, arsenobillon, novarsenobillon, diarsenol and galyl—will be supplied gratuitously for patients treated at home. The local authority may, on the advice of the Medical Officer of Health, supply other drugs when necessary, but cannot claim grant on the cost of such other drugs.

For the present, local authorities' schemes of treatment should be limited to cases of venereal disease in their communicable stages.

A special memorandum (V. 12) has been drawn up regarding the payment of travelling expenses of necessitous patients to and from an approved hospital. The Medical Officer of Health is allowed to authorise such payment if he has satisfied himself that the patient could not receive the treatment which the case requires unless his travelling expenses are paid by the local authority. The patient, however, must attend the approved clinic nearest his residence.

The local authorities' arrangements with hospitals, etc., should secure that the facilities provided will be available for all comers, without distinction as to means or as to place of residence, and whether the patient comes on the recommendation of a medical practitioner or not.

Under cover of the circular above referred to there is issued a memorandum as to the records to be kept and returns to be made by institutions approved by the Local Government Board. A perusal of this memorandum reveals how comprehensive the scheme is, and how thoroughly the problem is being dealt with. Certain forms are prescribed for the annual returns to be made by pathologists in approved laboratories, and by medical officers in approved treatment centres and institutions.

As regards the keeping of records, the Board do not *prescribe* any uniform plan. They *suggest*, however, a system of case papers and registers for the consideration of hospital authorities, which we think is at once so simple and so comprehensive that it may with advantage be generally adopted. It seems to involve a minimum of clerical work, while furnishing a register that is complete and easy of reference.

To ensure secrecy it is proposed that a *private register*, in ledger form, consisting of the name and address of the patient, with an *identification number*, be kept under lock and key by the medical officer of the clinic. This is the sole record of the name and address of the patient; in all other documents he is indicated only by the identification number. Each patient is furnished with an *identification card*



containing the name of the hospital, the patient's identification number, and the days and hours at which the clinic is open.

*Case record* schedules have been drafted for each of the venereal diseases in such a form that full clinical notes may be rapidly made with a minimum of writing. From these schedules the clerk of the clinic can readily prepare, on a card system, an *attendance register* and a *case register*, from which the annual returns can be drawn up. These registers will also prove useful to the medical officer of the clinic in carrying out scientific investigations on the various diseases and the results of different methods of treatment.

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**Birthday Honour.** ON the occasion of his birthday the King has conferred the honour of C.B. on Dr. John Macpherson, Medical Commissioner of the General Board of Control.

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### CASUALTIES.

**KILLED** in action, Lieutenant ARCHIBALD INGRAM MILLER, R.A.M.C., on 11th March, aged 34.

Lieutenant Miller was educated at Edinburgh University, where he graduated M.B. and Ch.B. in 1905. He was in practice at Stourport, Worcestershire, when the war broke out.

**DIED** on service, Lieutenant FRANCIS GEORGE HEARD, R.A.M.C., on 15th March.

Lieutenant Heard was educated at Edinburgh University, taking the Scottish Triple Qualification in 1889.

**DIED** on service, Captain JOHN CAMPBELL McDIARMID, New Zealand Medical Corps, on 24th March.

Captain McDiarmid was educated at Edinburgh University, where he graduated M.B. and Ch.B. in 1907, subsequently filling the posts of house-surgeon and house-physician of Perth Royal Infirmary, and of physician-superintendent of the Strathmore Hospital for Infectious Diseases.

**ACCIDENTALLY** killed, Captain HENRY ANDERSON LUNN, R.A.M.C., on 5th March.

Captain Lunn was educated at Anderson's College and at the University of Glasgow, and took the Scottish Triple Qualification in 1902. He took a temporary commission in the R.A.M.C. in September 1914, and had served in France and in Gallipoli.

LOST at sea, Dr. ARTHUR ROBERT STEEL, Surgeon in the Admiralty Transport Service, on 28th February.

Dr. Steel was educated at University College, London, and at Edinburgh, where he took the diplomas of L.R.C.S. and L.R.C.P. in 1885. Before the war he was in practice at Thornley, Co. Durham.

DIED on service, Captain JOHN M'CALLUM ORME, M.C., R.A.M.C.; reported in the casualty list published on 13th April.

Captain Orme was educated at Edinburgh University, where he graduated M.B. and Ch.B. in 1915. He took a commission in the Special Reserve of the R.A.M.C. in May 1914. On 25th November 1916 he was gazetted as a recipient of the Military Cross.

LOST at sea on 14th April, Lieutenant HENRY GRAHAM SMITH, R.A.M.C.

Lieutenant Smith was educated at Edinburgh, where he took the L.R.C.S. in 1883 and the L.R.C.P. in 1884, also the L.D.S. in 1886. He was in practice at Carnforth, Lancashire, till he took a temporary commission in the R.A.M.C. last July.

KILLED in action, Captain EDWARD JAMES BLAIR, M.C., R.A.M.C., on 11th April, while going to the relief of a wounded officer.

Captain Blair was educated at Edinburgh University, where he graduated M.B. and Ch.B. in 1914. He had been at the front about two years, was wounded by a shell eighteen months ago, and was gazetted as a recipient of the Military Cross on 10th January last.

KILLED in action, Captain STANLEY JAMES LINZELL, M.C., R.A.M.C., on 2nd April, aged 29.

Captain Linzell was educated at Edinburgh University, where he was President of the Royal Medical Society, and graduated M.B. and Ch.B. in 1912. He was gazetted the Military Cross on 17th April—a few days after his death.

KILLED in action, Captain TOM WELSH, M.C., South African Medical Corps, on 13th April.

Captain Welsh was educated at Edinburgh University, and graduated M.B. and Ch.B. in 1910. He received the Military Cross on 10th January 1917.

DIED on service, Captain THOMAS M'COSH, M.C., R.A.M.C., on 16th April, aged 34.

Captain M'Cosh was educated at Glasgow University, where he graduated M.B. and Ch.B. in 1905. He was attached to the Welsh Regiment when killed, and had received the Military Cross.

**KILLED** in action, Captain JAMES ELLIOT BLACK, M.C., R.A.M.C., on 19th April.

Captain Black was educated at Glasgow University, where he graduated M.B. and Ch.B. in 1911, afterwards going into practice in Glasgow. He received the Military Cross on 14th November 1916.

**KILLED** in action, Captain GEORGE DOUGLAS FERGUSON, D.S.O., R.A.M.C., on 22nd April, aged 27.

Captain Ferguson was educated at Edinburgh University, where he graduated M.B. and Ch.B. in 1913. He took a temporary commission in the R.A.M.C. on 14th August 1914. He received the D.S.O. on 14th November 1916.

**DIED** of wounds, Lieutenant JAMES ALEXANDER STUART BURGESS, R.A.M.C., on 23rd April.

Lieutenant Burgess was educated at Glasgow University, where he graduated M.B. and Ch.B. in 1910. He was in practice at Carronshore, Stirling County, before taking a temporary commission in the R.A.M.C.

**DIED** on service, Colonel JOHN HENRY EDWARD AUSTIN, A.M.S., at a military hospital in London, on 21st April, aged 54.

Colonel Austin was educated at St. George's Hospital, taking the diplomas of L.R.C.P.(Edin.) in 1887 and the M.R.C.S. in 1892. He served in the Nile campaign in 1898, receiving the medal and the Khedive's bronze star, and in the South African War from 1900 to 1902, receiving the King's and Queen's medals with five clasps.

**KILLED** in action, Lieutenant-Colonel FRANK ALBERT SYMONS, C.M.G., D.S.O., R.A.M.C., on 30th April, aged 48.

Lieutenant-Colonel Symons was educated at Edinburgh University, where he graduated M.B. and Ch.B. in 1891. He entered the Army as surgeon-lieutenant on 30th January 1893. He served in the South African War and received the Queen's medal with three clasps. He had served in the present war since the beginning.

**KILLED** in action, Second-Lieutenant HERBERT NORMAN HENNEY, Royal Field Artillery, on 25th April.

Second-Lieutenant Henney was educated in the school of the Royal College of Surgeons, Edinburgh, and took the diploma of L.D.S., R.C.S.(Edin.) in 1914.

**DIED** of wounds received on 12th April, Lieutenant JAMES EWING, R.A.M.C., aged 24.

Lieutenant Ewing was educated at Glasgow University, where he graduated M.B. and Ch.B. in 1916.



LOST at sea, Lieutenant MORRIS WILLIAM DANZIG, R.A.M.C., on 15th April.

Lieutenant Danzig was educated at Edinburgh University, where he graduated M.B. and Ch.B. in 1915. His commission was dated 1st March 1917.

LOST at sea, Lieutenant WILLIAM GRIER, R.A.M.C., on 15th April.

Lieutenant Grier was educated at Glasgow University, where he graduated M.B. and Ch.B. with commendation in 1905, also taking the D.P.H.(Glasg.) in 1910. He was in practice at Barrhead, Renfrewshire, before taking his commission.

LOST at sea on 15th April, Lieutenant JOHN MARSHALL, R.A.M.C.

Lieutenant Marshall received his medical education at the University of Edinburgh, and graduated M.B. and Ch.B., with first-class honours, in 1908. He was in practice at Lancaster before taking a commission in the R.A.M.C.

LOST at sea on 15th April, Lieutenant JAMES RAE, R.A.M.C.

Lieutenant Rae was educated at University College, London, and at Aberdeen University, where he graduated M.A. in 1904, M.B. and Ch.B. in 1909, and M.D. with commendation in 1911. He was in practice in Birmingham before he took a temporary commission as lieutenant in the R.A.M.C. in 1915.

DIED on service, Captain PATRICK CAMERON MACRAE, R.A.M.C., in March.

Captain MacRae was educated at Edinburgh University, where he graduated M.B. and Ch.B. in 1915, and soon after took a commission in the R.A.M.C.

CAPTAIN KALYAN KUMAR MUKERJI, I.M.S., is reported to have died as a prisoner of war in Turkish hands—in the casualty list published on 9th May.

Captain Mukerji was educated in the Calcutta Medical College, subsequently taking the diplomas of L.R.C.P.(Edin.) and the D.P.H. at Cambridge in 1908.

DIED of wounds, Captain GURTH SWINNERTON BLANDY, M.C., R.A.M.C.; reported in the casualty list published on 12th May.

Captain Blandy was educated at Edinburgh University, where he graduated M.B. and Ch.B. in 1902 and M.D. in 1912. Before war broke out he was senior assistant medical officer of the Middlesex County Asylum, St. Albans. He received the Military Cross on 3rd June 1916.

LOST at sea, Lieutenant JAMES TURNER BROWN, R.A.M.C., on 4th May.

Lieutenant Brown was educated at Glasgow University, where he graduated M.B. and Ch.B. in 1911. He was in practice at Gravesend, and had only recently taken a temporary commission in the R.A.M.C.

KILLED in action, Temporary Surgeon ARCHIBALD M'KERROW RUSSELL, R.N.; reported in the casualty list published on 26th May.

Temporary Surgeon Russell was educated at Glasgow University, where he graduated as M.B. and Ch.B. in 1914, and was a resident of Newmains, Lanarkshire.

DIED on service, Captain ROBERT FERGUSON RUSSELL, R.A.M.C.; reported in the casualty list published on 28th May.

Captain Russell was educated at Aberdeen University, where he graduated M.B. and Ch.B. in 1905, and was in practice in Jamaica until he took a temporary commission in the R.A.M.C.

DIED on service, Captain SORAB D. RATNAGAR, I.M.S., on 25th April, aged 32.

Captain Ratnagar was educated at the London Hospital, and took the Scottish Triple Qualification in 1911.

#### MEDICAL STUDENTS.

ANDERSON, WILLIAM, Second-Lieutenant, Black Watch, died of wounds recently, aged 26. Before the war he was a second-year medical student at Glasgow University.

CARMICHAEL, ANDREW W., Second-Lieutenant, killed recently, was a medical student at Edinburgh University before he joined the Army.

ROSE, WILLIAM, Lieutenant, Highland Light Infantry, killed 11th April, was educated at Edinburgh University, where he was a medical student when the war began.

THOMSON, ALEXANDER ANDERSON, Private, Gordon Highlanders, killed 9th April, aged 21. He was a third-year medical student at the University of Edinburgh before he enlisted.

AINSLIE, ARCHIBALD, Second-Lieutenant, King's Own Scottish Borderers, killed 19th April, aged 23. Before he joined the Army he was a medical student at Edinburgh University.

## THE TECHNIQUE OF SPLENECTOMY.

By CHARLES JOHNSTON SMITH, F.R.C.S.(Edin.),  
Senior Government Surgeon, Singapore ; Lecturer in Surgery to the  
Singapore Medical School.

I HAVE been stimulated to record the following technique for performing the operation of intentional splenectomy, because I have found it universally applicable in a consecutive series of seventy operations, comprising spleens ranging in weight from  $2\frac{1}{2}$  lbs. to  $7\frac{1}{2}$  lbs., movable and immovably adherent, ruptured and unruptured. I have found that it gives very comfortable access and manipulative facility for removal, and for treating the complications in every case.

*The Incision.*—The situation of the incision is constant, but the length can be modified to the requirements of the case. If the viscus is enlarged in its transverse diameter the incision will be carried nearer the middle line; if in its vertical axis, probably a little extension towards the loin will be necessary.

At a distance of 2 ins. below the left costal margin the incision runs parallel to it from a point 1 in. or less from the middle line obliquely downward and outwards to a point 2 ins. below the tenth rib in the anterior axillary line. This exposes the anterior sheath of the rectus, the semilunar line, and the external oblique muscle from within outwards on the floor of the incision. The upper edge of the incision is at this stage dissected from the subjacent sheath of the rectus and external oblique muscle as far as to quite above the costal margin for the whole length of the incision. This dissection is easy at this stage, and for subsequent suture gives comfortable definition of the edge of the external oblique, the upper segment of which retracts considerably when incised.

The anterior sheath of the rectus is now carefully divided without damaging the rectus muscle, and this incision is continued through the aponeurosis and external oblique muscle back to the limit of the skin incision, strictly following the same anatomical line. The incised sheath of rectus muscle is now dissected upwards and downwards from the subjacent muscle as far as the extent of the incision will permit. In thus raising the lower portion of the sheath one of the transverse hands frequently comes into the dissection and requires careful



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"shaving" dissection with a sharp knife. Separation of the upper portion of the incised sheath frequently divides a small perforating artery, which is best secured when the rectus muscle is raised from its posterior sheath as it comes forward through the sheath. The short anterior slip of the internal oblique aponeurosis is now divided at the outer edge of the rectus, to the extent of about 2 ins. in an upward and downward direction. This defines the outer edge of the rectus muscle for 3 or 4 ins. and the muscle can be easily elevated from its posterior sheath as far as (up to) the linea alba. During this dissection the eighth intercostal nerve is seen entering the posterior surface of the rectus, and is easily dissected up to the costal margin and preserved for subsequent enervation of the upper segment of the rectus.

The posterior sheath of the rectus and the internal oblique are now incised, and the line of incision, following that of the previous incisions, divides the internal oblique in almost the exact direction of its fibres. The small degree of obliquity is intentional to secure the small consequent retraction of the incised edges and clear definition of the subjacent transversalis muscle and intercostal vessels and nerves, usually two. Two clips are adjusted on each of these vessels, not including the nerves. The rectus muscle is now retracted inwards, and the abdomen is opened by incising some muscular fibres of the transversalis, which are prolonged behind the rectus sheath in this region, along with the subjacent and adherent fascia and peritoneum. This penetration is always made internal to the edge of the largest spleen, and this avoids the risk of incising an adherent spleen. Two fingers passed into the abdomen guide the safe section of the remaining structures as one. The transversalis muscle is so thin, and the muscle fascia and peritoneum so well attached when cut together and not dissected, that they can be sutured together without difficulty with security and rapidity. The line of incision is in the line of the muscle fibres. The five artery clips which have been applied are replaced by catgut ligatures. It is obvious that in this way an incision up to 14 ins. in length can be got with practically no subsequent impairment of the abdominal wall.

The next step in the operation is to *free the spleen*.

In the very large spleens, more or less filling the abdomen and weighing from 5 lbs. upwards, the operation is usually much more simple than in those of moderate enlargement, owing to the elongation of the splenic mesentery. The history of frequent attacks of splenic pain can be regarded by the surgeon as so many

recurring infarctions with subsequent adhesions in these regions, and an estimate of the age and extent of the adhesions to be met with can be pretty accurately formed. In the splenomegaly of chronic malaria, where painful recurring infarction is so common, and where the infarct may be subsequently infected through the blood-stream, an abscess may form with subsequent control of the infection and the sterile pus become calcified as in rare cases of empyema untreated. I have had in two cases of this series spleens so calcified to the diaphragm to free and excise. In other cases the omentum may be interposed between the spleen and parietes or diaphragm with adhesion to both surfaces.

The most frequent position for adhesion of surfaces is between the renal surface of the spleen and the peritoneum over the left kidney and diaphragm to the outer side of it. All these adhesions must be completely removed and the hand passed without obstruction over the colic, renal, gastric, and diaphragmatic surfaces of the spleen before the next step of the operation is undertaken, *i.e.* delivery of the spleen.

As in all other abdominal operations, the adhesion must be treated in a systematic manner.

Omentum can be ligatured and divided in the usual way. "Gauze wiping" dissection in the proper place succeeds in 75 per cent. of the cases. In the others, which are very firmly united by dense fibrous adhesions, the dissection must be conducted patiently and from all possible directions of approach. If the feeling is imparted to the dissecting hand that dangerous force will be required to overcome the fusion, an attack from another direction will often so reduce the union that a clip can be applied and the adhesion divided. This treatment will resolve all but the few exceptional and probably calcified unions. When these are met with the splenic capsule, usually much thickened, can be incised under full observation, and the capsule stripped from the pulp for the extent of the adherent patch. This gives rise to some hemorrhage, but not of alarming amount, and much like the ooze from the surface from which a Thiersch graft has been taken. The spleen, now quite free, can be delivered.

*Delivery of the Spleen.*—The lower lip of the abdominal incision is depressed, and the lower pole of the spleen is delivered on to the surface. A hand is now passed over the diaphragmatic surface and the fingers over the upper pole. The whole again is pressed downwards, and rotating on its mesentery, the upper pole is delivered over the costal margin, and the organ so everted



is supported by the assistant standing on the left side of the patient. With the above technique I have not yet met a case where the spleen could not be completely delivered outside the abdomen.

*Treatment of the Pedicle.*—The assistant now supporting the spleen, if large, with his right hand covered with gauze to prevent slipping, successively tilts the lower pole and posterior margin to permit of inspection of the pedicle before it is clamped. If definition is not clean, gentle gauze wiping will secure crisp definition of the structures in the pedicle and detach the pancreatic tail, which so frequently projects on to the renal surface and requires to be gently separated to permit of clamping of the mesentery without including a portion of the pancreatic tail. The pedicle varies with the spleen very much in length and disposition. It may be as long as 10 ins. or as short as 3 or 4. It may extend to within 1 in. of the upper pole of the spleen, or may simplify this step of the operation greatly by an attachment which does not extend to more than 4 or 5 ins. from the upper extremity.

There is considerable divergence in the disposition of the vessels entering and leaving the spleen at the hilum. From the surgeon's viewpoint, the modifications I have met with are probably best represented by diagrams indicating the fringes of pedicle left on the visceral surfaces of excised spleens. In this way a surface is cleared on the pedicle, providing enough room for the accommodation of two pairs of the large Mayo-Ochsner forceps side by side, and room for section by knife between them throughout the whole length of the pedicle. It may not produce serious consequences to include the pancreas in a ligature, but it is clumsy and unnecessary, and can be obviated by the above technique.

*Section of the pedicle* is made from below upwards, with the spleen completely eventrated and the whole length of the pedicle under observation. For clamping the pedicle the small Kocher or Spencer-Wells forceps are inadequate, and the curved Mayo pattern, which are constructed to secure maximum contact of the blades at the points, with considerable bowing of the blades above, are unsatisfactory for the purpose, and the surgeon who relies upon them for routine splenectomy when excising much enlarged organs will eventually be punished by the slipping from their grasp of one or more of the large vessels and the consequent alarming hemorrhage. The only clips I have found quite satisfactory are those of the Mayo-Ochsner pattern with straight blades and the "Stiles" box joint. These are adjusted to the pedicle in

pairs, as close to the spleen as possible, and only one large vessel is included along with the peritoneum of the splenic mesentery in each of the pairs so adjusted. I tried in a few of my earlier cases to isolate the vessels and clamp each separately, but I found, owing to the degenerative changes in the coats of the veins in chronic malarial spleens, simulating from the surgeon's point of view the condition met with in cases of extreme varicosity in the lower extremity, that the clips divided the veins like scissors, so that I now use the support of the peritoneum which the mesentery affords. Such clip is so placed that the terminal teeth close upon an avascular part of the mesentery. The tissue between the two pairs of forceps is divided up to the tips of the forceps, and the falling away of the proximal forceps produces just enough traction to define the next site for the second pairs of forceps. This method of application of the forceps in pairs is continued on the above plan from below upwards throughout the whole length of the pedicle. The final pairs of clips project over the upper margin of the pedicle, and must be applied as close to the spleen as possible, and inspected from behind as well as in front, before the final locking, as the pedicle here is frequently so short that accidental inclusion of the stomach wall must be carefully avoided.

In several of the more recent cases I have defined the splenic artery by palpation, and placed two pairs of clips on it before carrying out the above systematic treatment of the pedicle. I think it has some advantage in controlling hæmorrhage when the disposition of the large veins permits of it being done easily. With the division of the included structures between the last pairs of forceps the spleen is removed unbled, and thus soiling of the wound with blood from the spleen is avoided. The remaining clips, from 5 to 7, according to the length of the pedicle, are now held by the assistant and carefully retained in the final position they occupied outside the abdomen just before the spleen was removed. The pedicle is now ligatured in these sections with a strand of No. 1 abdominal silk doubled. Catgut is too risky, owing to the very large vessels to be secured; should one of the knots be forced and the ligature pushed off by the returning increase of blood-pressure a fatal hæmorrhage, in so short a time that surgical help to arrest it would probably be impossible, would result. I prefer the double strand of thin silk to a single strand of thick, because in this way strength of material is got without the increased difficulty of sterilisation of the thicker material.

These strands are handed to me 2 ft. in length. I test each,

double it, and tie off with a single knot in the centre of the ligature; a steady, but not excessive or jerky, pull is kept up on the ligature while the assistant gently frees the clip to permit of the bunching of the flattened-out tissues in the grip of the forceps. If this is not done with great care a small vessel or a portion of the lumen of a large vein will escape the ligature and may not demonstrate itself by hemorrhage till after the whole pedicle is relaxed and returned to the abdomen. The portion of pedicle so treated is now again grasped, distal to the ligature, with the point of the disengaged forceps, and steadied till the second knot is placed upon the ligature. This pair of forceps is left so attached and is allowed to fall aside. Each of the other segments of the pedicle is similarly dealt with from above downwards, and in each case a clip is left attached in its second position and the ligature ends left uncut. A fully curved large round needle, carrying No. 1 catgut, is passed in turn through each ligatured segment of the pedicle between the ligature and the terminal artery forceps, each segment in turn being raised by traction on the clip not on the ligature, which acts as a guide to prevent the needle being passed on the proximal side and possibly wounding a vessel. The clips are now all removed, and the stumps, each threaded on the catgut, relaxed and untied, are allowed to fall back into the abdomen and examined for hemorrhage. Should any hemorrhage demonstrate itself the stump is redelivered by traction on the catgut stitch, and the imperfection quickly rectified by another turn of the silk ligature left uncut for the purpose. If everything is dry and above suspicion and in security, the long ends of the silk ligatures are now cut in a bunch about  $\frac{1}{4}$  of an inch from the knots and the catgut stitch tied. This bunches the stumps into a compact mass and adds extra support to the ligatures.

*Peritonisation of the Stump.*—An intestinal needle, threaded with No. 0 catgut, is now passed through five or six avascular points at a distance of  $1\frac{1}{2}$  to 2 ins. from the stump, picking up splenic mesentery and omentum on all sides of the stump; this, when tied, acts as a purse-string stitch and sinks the raw stump.

*Toilet of the Abdomen.*—A large curved abdominal retractor is passed below the costal margin and held by an assistant in his right hand. A broad deep flat retractor is placed over the pads below which protect the splenic flexure and retains the viscera in that region. The surgeon now lays a large thick pad, 12 ins. long by 8 ins. wide, with an attached tape, flat on the palm of his right hand, and passes this up to the diaphragm with the pad



towards the stomach. The under surface of the diaphragm is inspected, and any bleeding point from detaching adhesions is easily secured and ligatured by a catgut stitch. Any raw areas are carefully peritonised. The regions which may require treatment are the peritoneum over the kidney, and possibly the under surface of the left lobe of the liver. As the gastric pad is removed the stump is again inspected before closing the abdomen. The primary pads and secondary pads are now removed and the abdomen closed without drainage.

It will be observed when the pads are in place and the retractors in position, so that retraction above, below, and to the right is maintained, the clear view the surgeon gets of the field of operation. The heart can be seen to pulsate through the diaphragm. The left lobe of the liver can be examined and inspected, and the left kidney observed in its whole length bulging forward, the peritoneum plunging with each respiration; the splenic flexure of the colon with part of the transverse and descending portions are also beautifully exposed for any surgical manipulation in those regions.

I know of no other incision which will give anything like the same manipulative comfort and exposure adequately to deal with such complications as may arise during the operation of splenectomy of large, adherent, and very vascular spleens.

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**ACUTE OTITIS MEDIA WITH PARALYSIS OF THE SIXTH NERVE (GRADENIGO SYMPTOM-COMPLEX).**

By DOUGLAS GUTHRIE, M.D., F.R.C.S., Temporary Surgeon to the Ear and Throat Department, Royal Hospital for Sick Children, and to the Edinburgh Eye, Ear, and Throat Infirmary.

THE following case, which recently came under my notice, illustrates one of the rarer complications of suppurative otitis media.

Private J. W. B., aged 21, was admitted to Bramshott Military Hospital on 11th April 1916, suffering from pain in the right ear, accompanied by purulent discharge. He stated that, although in childhood he had a running ear, there had been no discharge since the age of 10, but only an occasional earache if he caught cold.

The present attack commenced three weeks ago, and since then, while the discharge has gradually lessened, severe pain in the ear and side of the head has continued.

Temperature 100·2 ; pulse 80 ; no mastoid tenderness ; no giddiness ; no nystagmus.

Hearing tests—Watch heard only on contact ; whisper at 2 feet ; Rinne negative.

On examination the inner half of the right meatus was found to be intensely red, and likewise the tympanic membrane. There was a large postero-inferior perforation through which protruded small polypi. Discharge slight, muco-purulent, and non-fetid.

Left ear—Hearing normal ; tympanic membrane indrawn.

13th April.—He complains of a stabbing pain at the back of his right eye, and of double vision. The earache is still present, though intermittent. There is an internal strabismus of the right eye, and the movement of abduction cannot be carried out. He was seen by Lieut. E. H. Cameron, who confirmed the diagnosis of complete paralysis of the sixth nerve, and reported that the optic discs were of normal appearance.

15th April.—Patient feels more comfortable, though he has been sleepless and looks ill and tired. There is still throbbing pain in the ear, radiating over the side of the head and into the eye. The pain is aggravated when he moves the eyes. No tenderness. The paralysis is unchanged (Fig. 1). Temperature 98·8 ; pulse rather slow, ranging from 50 to 68.

23rd April.—The pain behind the eye has become more severe.

The paralysis remains unchanged. The condition of the ear has not improved, in spite of careful conservative treatment, and there is still deep-seated pain in the ear, but no mastoid tenderness.

Caloric test.—On syringing the right ear with cold water, nystagmus towards the left was produced in sixty-five seconds, indicating an intact labyrinth.

*24th April.*—Radical mastoid operation was performed. The mastoid process was of a distinctly "pneumatic" type, so much so indeed that it was difficult to know where to stop in operating, as compact bone was nowhere encountered. Most of the cells contained sticky muco-pus, of which unfortunately no culture was obtained. The attic and aditus were found to be filled with granulations and small polypi. The ossicles were not carious. A small area of dura, which was exposed, appeared to be healthy. It was carefully separated for a short distance from the petrous bone, to which it was firmly adherent, but no pus was found in this situation. The operation was then completed in the usual manner.

*25th April.*—Pain at the back of the eye very severe, necessitating the use of morphia. Much troubled with persistent hiccough. Temperature 101°.

*27th April.*—The pain is almost gone and he feels distinctly better. No hiccough. A slight, but distinct, abducent movement of the eye is now possible. Pulse and temperature normal.

*20th May.*—Patient now feels well and able to go about. The wound is healed and the ear cavity looks clean, though not yet dry. He still feels pain when he moves the eye, especially in the outward direction. He is now able to abduct the eye a little, but still suffers from diplopia on looking towards the right, and is obliged to wear a shade. He has been granted one month's sick leave.

*4th July.*—The ear is dry and clean. The ocular paralysis has improved so that almost full abduction is now possible, but this movement causes pain, especially in a bright light (Fig. 2). He can now read and dispense with the shade indoors. He only occasionally suffers from diplopia.

*18th September.*—Following his discharge from the Army, the patient has gone to live at home in the country, and he writes: "I feel much better. My ear is quite well but my right eye aches sometimes when I am tired."

*12th March 1917.*—In reply to my inquiry he writes: "I am feeling like my old self again. I have no pain, but sometimes I





FIG. 1.—15th April 1916.



FIG. 2.—10th July 1916.

(The white spot on the right eye is a flaw in the photograph.)

The Photographs illustrate the Condition of the Eye Before and After the Mastoid Operation, the Patient having been directed to look towards the Right.



have the double sight. The ear is quite well, and I am now able to do light work on a farm."

Otogenic paralysis of the sixth cranial nerve is a distinctly rare condition.

Gradenigo<sup>1</sup> of Turin, in his paper on the subject, describes the symptom-complex as "an acute middle-ear suppuration accompanied by intense unilateral headache and paralysis of the abducent nerve."

As in the case above described, the otitis is frequently an exacerbation of a chronic otitis media.

Further complications, such as oculomotor paralysis, labyrinthitis, sinus thrombosis, meningitis, etc., are found in about 50 per cent. of the cases quoted in literature.

Gradenigo has collected fifty-three cases, only five of which were examined post mortem, so that pathological data on the subject are scanty. Acute meningitis was the cause of death in all five cases. In three of the cases a localised abscess was found at the apex of the petrous bone; in the remaining two, a carious focus in the same situation. The path of infection from the tympanum to the petrous apex was demonstrable in two cases. In two cases the bone was remarkably "pneumatic" in structure.

The pathology of the condition, in Gradenigo's opinion, consists in a spread of infection from the tympanic cavity along the cells which surround the bony part of the Eustachian tube, towards the apex of the petrous temporal. Here the sixth nerve is closely related to the bone and, as it traverses the narrow cleft known as Dorello's space, is readily liable to suffer from the effects of pressure.

Dorello's space is a triangular osseo-fibrous canal bounded by the petrous apex, the posterior clinoid process, and the petrosphenoidal ligament. In this region the sixth nerve is extradural and isolated from other nerves, and it is easy to see how it may be pressed upon and involved in suppuration affecting the apical pyramidal cells.

Since Gradenigo's publication Wilkinson<sup>2</sup> has described a case of otitis with abducens paralysis, which proved fatal from meningitis. Post mortem revealed an abscess cavity at the apex of the petrous temporal, and the track of infection from the tympanum, along the cells surrounding the Eustachian tube, to the carotid canal, and thence to the area of spongy or cellular bone at the apex of the pyramid, was clearly demonstrable in a section.

Wilkinson suggests that if one could with certainty diagnose such an abscess, it might be approached and drained by stripping the dura from the roof of the petrous bone.

In the case here reported I attempted to do so, but discovered no pus, and although the persistent pain (denoting irritation of the Gasserian ganglion) led me to operate, it is possible that spontaneous recovery would have resulted without operation.

This tendency to spontaneous recovery is illustrated in a number of recorded cases.

Barr,<sup>3</sup> for example, has described two cases of Gradenigo syndrome occurring in boys, and presenting features of remarkable similarity. Both suffered from chronic otitis media, and, in addition to the paralysis of the sixth nerve, there was in both cases double optic neuritis. In each case operation revealed extensive mastoid disease with cholesteatoma and peri-sinus abscess. Complete recovery from the abducens paralysis took place in about four months, while the optic neuritis passed off in six months, leaving normal vision.

Muecke<sup>4</sup> has reported a case of lateral sinus thrombosis with paralysis of the sixth nerve. Operation was followed by complete recovery.

Two cases are cited by MacNab,<sup>5</sup> in children aged 8 and 10 respectively. Both were cases of acute post-influenzal otitis. The patients complained of intense temporal pain and diplopia on looking towards the affected side. In one case a large "apical" cell full of pus was entered during the mastoid operation, in the other no apparent cause of eye symptoms could be found. Recovery from the paralysis took place in both instances about six weeks later.

Gradenigo's explanation of the pathology of the condition has not been universally accepted, and some observers are inclined to regard the abducens paralysis as the result of a toxic neuritis, while others attribute the symptoms to "reflex paralysis by way of the vestibular nerve."

In the existing state of our knowledge, however, the view stated by Gradenigo would appear to carry most weight and probably is the true explanation of the majority of the cases.

Both abducent nerves may be affected, as in the case observed by Mayo Collier.<sup>6</sup> This was a chronic otitis media in which the removal of an aural polypus was followed by acute mastoiditis, double optic neuritis, and paralysis of both external recti. A radical mastoid operation was performed, and the case did well,



but the paralysis and optic neuritis did not improve. The case was regarded as one of basal meningitis.

A somewhat similar case was seen by Mounier<sup>7</sup>; while there are instances in literature of otitis accompanied by paralysis of the sixth nerve on the opposite side (Furet<sup>8</sup>).

Those bilateral and contra-lateral cases, however, differ both clinically and pathologically from the type described by Gradenigo, and their exact etiology is not yet clear.

REFERENCES.—<sup>1</sup> Gradenigo, *Arch. f. Ohrenheilk.*, vol. lxxiv.   <sup>2</sup> Wilkenson, *Journ. of Laryngol.*, August 1914.   <sup>3</sup> Barr, *Brit. Med. Journ.*, 26th September 1908.   <sup>4</sup> Muecke, *Proc. of Roy. Soc. of Med.*, Otological Section, 21st November 1913.   <sup>5</sup> MacNab, *Journ. of Laryngol.*, September 1915.   <sup>6</sup> Mayo Collier, *ibid.*, October 1901.   <sup>7</sup> Mounier, *Internat. Centrallbl. f. Ohrenheilk.*, 1910.   <sup>8</sup> Furet, *Ann. des malad. de l'oreille*, 1908.

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## THE CLINICAL SYMPTOMS AND TREATMENT OF HYPERTROPHY OF THE THYMUS GLAND.

By CHARLES GREENE CUMSTON, B.S., M.D., Privat-Docent at the  
University of Geneva, Geneva, Switzerland.

THE clinical signs met with in hypertrophy of the thymus are of two orders—(1) The functional symptoms, characterised by respiratory disturbances which attract attention; and (2) physical signs which must, on the contrary, be systematically and carefully searched for. These signs vary in importance, but it seems to me that one should not be content with the discovery of only one, perhaps two, of them, and that it is essential to detect the larger number of them and then study the relative value of each, whether they result from inspection, palpation, percussion, auscultation, or a radiographic examination.

The functional symptoms are those of respiratory disturbances, such as dyspnoea and efforts at inspiration, but since these are common to other diseases of infancy, it is well to ascertain if they do not present some evolutionary trait which would lead to the discovery of the thymic origin of the accidents presented. A permanent dyspnoea, coupled with inspiratory effort, has been said to increase if the head is extended, when the patient is lying down or by the use of a tongue-depressor.

The inspiratory effort is not that of croup, and has this peculiarity, that with each inspiration there is a forward projection of the sternum, a decrease in the transversal diameter of the thorax, and a spreading of its lower circumference. Under certain circumstances this deformity may become permanent, and thus furnish a sign of an enlarged thymus.

Rather frequent paroxysms of suffocation arise in most cases of thymic hypertrophy, and they frequently complicate the continued respiratory accidents or suddenly manifest themselves in a state of apparent health. These paroxysms are usually nocturnal, causing some cyanosis which is relieved by the sitting position, and at length subside.

Spasm of the glottis and stridulous laryngitis are not supposed to be found in the accidents of hypertrophy of the thymus, but instances have been reported where the respiratory symptoms were ushered in by these symptoms. Therefore, it may be assumed that when intense and persistent paroxysms occur which

simulate the commencement of an ordinary stridulous laryngitis an enlarged thymus may be suspected, and its symptoms looked for.

The pathogenesis of stridor has been, and still is, a much mooted question, some considering it as always being due to hypertrophy of the thymus and to the compression resulting therefrom, while others, and they are many, maintain that this symptom is caused by a malformation of the larynx.

At present it would seem as if two clinical types of stridor existed, viz. laryngeal stridor without paroxysms of suffocation, and thymic stridor with very serious paroxysms of suffocation. If an exact analysis of the functional disturbances is such that one may suspect a hypertrophy of the gland, the ensemble of the physical signs of this morbid process should be systematically searched for, and may be found by inspection.

The facies is often peculiar, cyanosis of the face is intense at the time of the paroxysms of suffocation, but if the dyspnoea, although moderate, be prolonged one may perceive that a slight cyanotic tint of the face remains during the remissions.

Distension of the superficial veins of the neck should be mentioned. It disappears shortly after the respiratory disturbances have subsided, but recurs when the child cries and with the return of the paroxysms. This symptom is evidently due to compression of the large vessels of the neck from the hypertrophied thymus.

Palpation and percussion will often reveal other diagnostic signs. A forward vaulting of the manubrium of the sternum has been mentioned, as well as an abnormal and asymmetric forward projection of the upper part of the costo-sternal area. In order to perceive distinctly this condition the infant must be laid flat on the bed, and the part inspected with the light coming from behind the examiner.

Sometimes this sign is not distinct, either because the deformity is slight or that the subcutaneous fat partially conceals the bony projections. The visual impression should then be confirmed by palpation and percussion. The latter should be made over the upper limits of the sterno-costal area, just under the clavicles and going from the shoulder towards the sternum. An area of dulness of several centimetres will be found, on the borders of which a narrow area of incomplete dulness can be made out.

Retrosternal pressure has been described as a diagnostic means

and carried out as follows:—The child is seated with the head in semi-extension; the pulp of the index is placed over the suprasternal fossa, so that it can become engaged somewhat behind the sternal manubrium. By this downward retrosternal pressure the stridor ceases, only to begin again as soon as the pressure is removed. By this manœuvre the upper pole of the thymus is forced downwards, and thus relieves the pressure on the trachea by the enlarged gland.

Auscultation is usually negative in results, while the results furnished by radiography have been variously interpreted, some maintaining that it is an excellent diagnostic means, but it is certain that the interpretation of the radiographic picture is by no means easy. Radioscopy may be useful inasmuch as enlarged tracheo-bronchial glands may be eliminated from the diagnosis.

The treatment of hypertrophy of the thymus will be indicated by a more or less certain diagnosis or be required from serious symptoms observed without any previous clinical study. In the latter case intubation or tracheotomy will be done on account of the urgent indications. Intubation with a long tube has given some results, although this question is still doubtful, but what is certain is the absolute uselessness of intubation in thymic asphyxia.

*A priori* the same might be said of tracheotomy, since the obstacle is situated too low for the cannula to reach beyond the limits of the obstruction unless a special instrument be used. However, certain peculiar conditions that have been observed in this operation in cases of hypertrophy of the thymus may explain the possible and partial efficaciousness of this interference. Severe venous hæmorrhage has occasionally occurred, and this, combined with the incision of the structures over the suprasternal region, may produce a depletion of the gland which would result in a decrease in size and consistency, so that the existing compression is removed, at least temporarily.

The only rational treatment of the urgent accidents due to hypertrophy of the thymus, the diagnosis of which has been made, is surgical interference. Three distinct surgical methods have been essayed, viz. exothymopexy, resection of the sternal manubrium, and, last, but not least, thymectomy.

Exothymopexy may suffice to bring about a complete and permanent cure, but when the hypertrophy is considerable this operation can only be resorted to as a complementary one to extirpation. The glandular stump and the débris of the capsule



have been sutured to the upper border of the sternum and aponeurosis of the neck by some surgeons, and it has been declared that simple thyropexy is to be unrestrictedly rejected, and, in point of fact, it seems that it might be more difficult to fix an enlarged thymus to the incision than to excise it. It is more difficult to pass the sutures of fixation than to apply a simple ligature on a pedicle which is always thin in these cases.

Furthermore, when a complementary thymopexy is done, the debris of the gland which has not been removed are united to the posterior aspect of the manubrium, just at a point where their presence is more than likely to press upon the trachea.

Resection of the manubrium has never been employed alone, and has always been a step in the partial resection of the gland or in thymopexy. This resection is both a useless and insufficient procedure, prolonging and aggravating the operation needlessly, without offering any advantages, so that it should be discarded.

Thymectomy is unquestionably the operation of choice, and unquestionably also is the technique by intracapsular enucleation. Any attempt to remove the gland with its capsule results in severe loss of blood, and exposes the patient to injury of the pleura, pericardium, and large vessels.

As to the utility of total or partial excision opinions differ, but in going over the records of reported cases it seems very evident that partial subcapsular thymectomy offers the best chance of success, and with comparatively little risk. The ultimate results have been excellent, and an immediate and lasting improvement has ensued.

In considering the mode of action of surgical treatment the fact must be remembered that in partial thymectomy, when only a very small fragment of the gland has been removed, this has been quite enough to cause the symptoms to subside. It is probable also that the improvement resulting from removal of only a portion of the gland is not due entirely to this fact and that the free dissection of the superficial aponeuroses, which results in disgorgement of the thymus, must be likewise taken into account.

Radiotherapy may be resorted to with the aim to cause an acceleration of the thymic involution, but sufficient experience along these lines has not as yet been acquired to enable one to speak positively as to its utility.

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## CLINICAL RECORD.

## A CASE OF MYXOSARCOMA OF THE SOFT PALATE.

By DAVID M. GREIG, C.M., F.R.C.S.(Edin.),  
Senior Surgeon, Dundee Royal Infirmary, etc.

NOT because I have never seen such before, but because I have been unable to find the counterpart of this tumour in the literature at my command, I assume the condition to be an uncommon one. The fundamental basis of the tumour is common enough—it is only sarcoma—but the course it ran and the physical characters the growth assumed are surely unusual. The patient was a boy of 13 years, who was referred to me on account of a growth on the palate of between three and four years' duration. He was a healthy lad, well nourished, well formed, and of good colour. His family history was entirely satisfactory, and contained no record of growths or congenital abnormalities. He had no illness previous to nearly four years ago, when it was noticed that he was speaking somewhat thickly, and on examination a small growth was observed depending from the soft palate. This was removed by a surgeon under local anaesthesia. The growth recurred, however, shortly afterwards, and a year after the first operation it was more thoroughly removed by another surgeon, and the base of the tumour frequently cauterised thereafter. Some twenty applications of the actual cautery were made and from time to time sloughs separated, but the treatment lapsed and again the growth gained ground.

On inspection the entire soft palate, the uvula, and the posterior half of the hard palate were seen to be hidden by a flattened, papillomatous-looking growth split up into many lobules and obviously attached by a broad base. There was no induration, the general surface of the tumour was smooth, no individual lobule projecting. The right tonsil seemed fuller than natural. There was no nasal obstruction, and no enlarged glands to be felt about the neck. Under an anaesthetic the dendriform character of the growth was even more obvious. Its base was certainly a broad one, but was limited entirely to the soft palate, the uvula and the left posterior margin of the palate being unaffected. The anterior edge of the tumour projected



Myxosarcoma of Soft Palate (i), showing Lobulation and General Contour.





forwards over half the hard palate. There was no growth on the pharyngeal surface of the palate, but there was a good deal of overgrowth of the pharyngeal tonsil.

The futility of saving any part of the soft palate was obvious, an incision was therefore made through its whole thickness at its junction with the hard palate, and was prolonged laterally backwards to include the anterior pillars of the fauces, and the right tonsil was at the same time enucleated. The boy had an easy and rapid convalescence, though, of course, he at once developed and maintained a nasal intonation. He remained free of any trouble for nine months, when I again saw him on account of a small recurrence on the right side on the mucous membrane in front of the site of the enucleated right tonsil. This small recurrence was freely excised, and he has had no trouble since.

On inspection the tumour was found to be a somewhat circular mass of curiously flattened lobules or papillæ of which the free ends were considerably broader than the attached, giving each lobule a curiously clubbed appearance. The lobules varied in colour and consistency, some being darker than others, some presenting a certain amount of translucency. A photograph of the tumour is shown in the annexed Plate. A pathological report by Professor Sutherland stated: "The lesion microscopically has the structure of myxosarcoma. The papillomatous surface has probably resulted from the tendency of the tumour to assume a lobulated form. The myxomatous element explains the peculiar translucent, bulbous appearance of the surface processes."

Sarcoma of the palate or anywhere about the mouth is not usually lobulated, indeed lobulation of a sarcoma, except in rare cases of racemose sarcoma of the cervix uteri, is an unexpected feature, and in the case I have just described the levelness of the free surface of the tumour was very striking. The explanation is probably that the contact of the oral surface of the tumour with the tongue interfered with irregular free growth of the lobules. In the constant presence of moisture, the frequent pressure of the tongue had produced the three peculiar features of the tumour, namely, the levelling of the surface opposed to the tongue, the clubbing of the papillæ, and the dendritic growth of the tumour *en masse*, and it may be that the myxomatous element in the sarcoma may have conduced towards the lobulation. The tumour, on the whole, bore a striking resemblance to

some of the sessile tumours found in the urinary bladder, where frequent pressure and constant moisture obtain, though the tumour on examination may be neither myxomatous nor a sarcoma.

In the process of preparation of the macroscopic specimen the lobulation became more distinct, the individual lobules separated, and the whole surface became less velvety. Unfortunately this preparation interfered with the production of a microscopic section properly staining for photomicrography. Villous sarcoma is perhaps not so uncommon. It might almost be said that nodular masses are the characteristic form sarcomatous tumours take, and this formation is but a step to that of villi, for which moisture and a free surface are probably essential adjuncts.

One had to sacrifice cosmetic results for the safety of free removal, but the phonation was not rendered grossly imperfect. Though a permanent nasal intonation remains, the lad speaks with a distinctness which is not, as a rule, found after even the most successful operations for cleft palate.

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MAJOR W. G. PORTER, D.S.O., R.F.A.



## OBITUARY.

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MAJOR W. G. PORTER, D.S.O., R.F.A.

BY the death of Dr. William Guthrie Porter the medical profession has lost one of the most promising of its younger members. He was killed in action on 9th June.

The fighting instinct was strongly developed in him, but that in no sense hardened him or interfered in the least degree with the gentleness of his nature. It was just this blending of strength and gentleness which was such an attractive feature of his personality, and which stimulated the affection in which he was held by those who knew him best. If he thought that a thing was wrong, or that injustice was being done to anyone, he never hesitated to express his opinion very forcibly, and he sought to have the wrong made right. On the other hand, along with a cheerful disposition, he possessed a kindliness of manner and a sympathetic nature which made him essentially human. He had many friends to whom he was closely attached, and with whom he loyally worked.

Dr. Porter in his younger days saw service in the Boer War. He afterwards joined the R.A.M.C., Territorial Force, and for a time was attached as medical officer to the First Lowland Brigade. This position, however, did not suit his temperament, and, after passing his examinations and undergoing the necessary training, he received his commission in the combatant arm of the Service. After the declaration of war, Porter frequently expressed his desire to be out and doing. He was a most efficient and popular officer, and he laboured to make perfect the training of his battery. One cannot realise any other attitude of mind where his duty was concerned.

He fought in the Somme battles in the summer and autumn of 1916, and he was very proud of the part which the battery had played in these actions. During the winter he was promoted to Major's rank. He took part in the advance at Arras in April of this year, when he was slightly wounded after having gone forward to register his guns. He returned to France at the end of May after short sick leave, and he fell on 9th June. His name appeared in the recent Honours List as the recipient of the D.S.O. At the outbreak of war he cheerfully and ungrudgingly gave up his professional work, and in just the same spirit he has given up his life for his country.

Officers and men alike have testified to the affection in which he was held, to his bravery in action, to his fearlessness, and to his soldierly qualities: "always cheery, always ready for anything, they

thought all the world of him, and his battery adored him." He was buried in the soldiers' cemetery at Renninghalst, and all who could get leave followed him to his last resting-place.

The Edinburgh Medical School, and especially that department of it in which Porter had selected to work, is much the poorer for his death, and his place will be difficult to fill. He had already made for himself an honourable position, and he was looked upon as a man with a most promising future. With a sound training, both in the science and practice of his profession, his contributions to the literature of his specialty had already marked him out as a man who would add still further to the scientific knowledge of the diseases of the ear, nose, and throat. He combined accuracy of observation with attention to detail, and he had great skill in operating. Straightforward in his dealings, both with his patients and with his professional brethren, he had won for himself their confidence and respect.

In these days of strenuous work, when men's minds are much occupied with the rapid passing of important events, there is a natural tendency to forget those who have passed away in fighting their country's battles, but the memory of "Billy" Porter will long be held in affectionate regard and esteem by his many friends and admirers.

A. L. T.

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## RECENT ADVANCES IN MEDICAL SCIENCE.

### MEDICINE.

UNDER THE CHARGE OF

W. T. RITCHIE, M.D., EDWIN MATTHEW, M.D., J. D. COMRIE, M.D.,  
AND A. GOODALL, M.D.

#### THE RELATIONSHIP OF DIPHTHEROID ORGANISMS TO HODGKIN'S DISEASE.

At the present time it is generally believed that Hodgkin's disease is due to a specific infection. This belief has led to a considerable amount of research with a view of determining the nature of the causal organism. Various types have been described, but there has been some confirmation of the observations of Fränkel and Much that the disease is often associated with a granular non-acid-fast bacillus. Their observation was, however, weakened rather than strengthened by the finding of a similar organism in five cases of lymphatic leukæmia.

Cunningham (*Amer. Journ. Med. Sci.*, March 1917) has carried out a research on the organisms found in a large number of cases of glandular enlargement. Most of his material was obtained from the operating-room. He isolated a large number of organisms, but reaches the conclusion that they may all be placed in the diphtheroid group. In some cases the diphtheroids were associated with cocci which later overgrew them. He regards it as reasonable to suppose that glands draining the mouth, throat, and tonsils should harbour such organisms as are commonly found in these portals. With the evidence at hand—the occurrence of organisms in the laboratory, in blood cultures, appearing rather late in the heart blood at the mortuary, in ascitic fluid, and in a series of gland cultures of questionable technique and not in a series where technique was definitely controlled—Cunningham is led to believe that the natural habitat of the organisms is the laboratory. The diphtheroid organism found by various observers as well as by the author is not believed to have any causal relationship to Hodgkin's disease.

#### CLINICAL SIGNIFICANCE OF BLOOD EXAMINATION AFTER WOUNDS.

Govaerts (*La Presse Médicale*, 29th March 1917) publishes some interesting and useful observations on the blood after the infliction of wounds. In severe cases there is a condition of acute asthenia depending upon an enormous fall of blood-pressure, a state of nervous depres-

sion, and a lowering of temperature. This state results from several factors which may be combined. These are shock, acute infections, and hæmorrhage. The last factor is the easiest to isolate and it is necessary to assess its importance in any case, since it may afford important indications for treatment. It is notoriously difficult to predict whether in a given case of low pressure the injection of artificial serum will have a favourable and prolonged effect or will be inoperative. A knowledge of the actual condition of the blood may indicate the necessity for transfusion and in certain cases may point to the desirability of operative interference, for example, in abdominal hæmorrhage.

Post-hæmorrhagic anæmia becomes evident when the mass of blood is restored by the passage into the vessels of fluid from the tissues. In man this is a slow process, but in dogs and rabbits it is complete in about four hours. It follows that the blood-counts made in man after a hæmorrhage do not correspond at first to the importance of the anæmia. In a typical case the red corpuscles diminish in number for three or four days after a hæmorrhage. The number remains at the lowest point for three or four days and begins to rise again slowly on the seventh or eighth day. If a fall of corpuscles continues after the fourth day there is a likelihood of infection having occurred. A complication such as peritonitis causes the red count to rise.

An increase of leucocytes takes place very rapidly after a severe wound. In one case the count was 25,000 one hour and a half after the wound; in another, two days after the wound, the count was 35,500. The increase rapidly diminishes and has often disappeared in forty-eight hours. Its degree corresponds roughly to the severity of the wound. The polymorphonuclear cells are chiefly involved, their percentage often being about 85. The following practical conclusions are reached.

For some hours after a hæmorrhage the number of red corpuscles is not in accord with the severity of the blood loss. If in the first six hours after a hæmorrhage the number of red cells has fallen below four millions per c.cm., and the number of leucocytes exceeds 30,000, the hæmorrhage has probably been severe and the prognosis is grave. In some such cases the injection of artificial serum has been ineffectual and there appears to be a clear indication for transfusion. If one has any reason to suspect an important internal hæmorrhage (abdominal contusion without any external sign) the determination of the presence of a leucocytosis a short time after the injury ought to suggest the diagnosis and give an indication for operation. In a case of abdominal contusion from the kick of a horse the author found a normal number of red corpuscles (5,360,000) and a high leucocytosis (31,600) seven hours after the injury. There was a complete rupture of the spleen. A sharp rise in the number of red corpuscles during the course of the treatment of a wound strongly suggests the possibility of a peritoneal reaction or an effusion into a serous cavity.



# INFLUENZA.

Some interesting papers dealing with influenza as it is seen on the other side of the Atlantic have recently appeared.

Park (*New York Med. Journ.*, 24th March 1917) deals with bacteriology and points out that there is a doubt whether all the great epidemics have been due to the organism discovered by Pfeiffer. It is not proved that the epidemic which reached America in 1890 was due to it. This does not mean that there is any doubt about the importance of the influenza bacillus in a great many of the inflammations of the respiratory tract as well as of other parts of the body. The epidemic which spread from west to east in America in 1916 was widely studied, and various observers in different cities found that streptococci, pneumococci, and micrococcus catarrhalis were all more common than the influenza bacillus.

Brill (*ibid.*) points out the same difficulties and states that the presence of influenza must necessarily be established on clinical manifestations. On this account errors in judgment will arise and doubt will attend diagnosis. While in the main the clinical signs of the disease are fairly constant in some of the sporadic forms, this is not true when the disease appears under pandemic conditions. Under the latter conditions the symptoms may be so unusual that the disease is not recognised as in the pandemic of 1889-90. The primary division of clinical types might rest on an epidemiological basis of pandemic, epidemic, and sporadic types. So great are the differences that one who had seen merely the mild sporadic disease might be nonplussed when he observes the varied clinical types which appear when the disease occurs pandemically. The pandemic form is a protean disease whose clinical characteristics vary widely, and the virulent nature of the organism and its toxins respects not a single tissue of the body. The pandemic form is noted for its high incidence in communities, almost 50 per cent. of all individuals therein being affected. It is noted also for the overwhelming nature of its onset, the extreme prostration which accompanies it, and the intensity of the other clinical manifestations. During the pandemic invasion of the disease all degrees of intensity may be noticed, from prostration with fatal results within a day to a mild fever without any special clinical localisation of the infection or perhaps with the mildest signs of a nasopharyngeal catarrh. Between these two extremes many variations and combinations of system-forms may be seen. Symptoms depend upon the intensity of infection, its toxic products and the resistance of the individual. The prostration is usually severe out of proportion to other symptoms in all the types. The fever is subject to many variations. It often rises abruptly to 103° or 104°. Hyperpyrexia is not rarely met with. Occasionally the rise of temperature is gradual. The temperature may

decline abruptly in twelve to thirty-six hours or it may descend gradually over a period of several days. Not infrequently there is a temperature lasting over two weeks which closely resembles the fever of typhoid. Rarely the fever resembles that of a quotidian or a tertian malaria. Should extensive bronchitis or pneumonia supervene the temperature will, of course, be modified.

Atypical onsets are common. These are chiefly associated with the forms affecting the nervous system. The infection may be ushered in by unconsciousness which may last for hours and there may be only a slight elevation of temperature. After regaining control of his mental faculties the patient may show either slight or severe respiratory symptoms. The infection may begin with a definite psychosis, such as maniacal excitement or confusional stupor. Onset may show gastrointestinal disturbance with vomiting, watery or even hæmorrhagic stools, tympanitis, and rigidity of the abdomen. In spite of the stormy onset these cases are soon convalescent. Relapses, both late and early, are frequent. Possibly some are due to an entirely new infection.

Convalescence is established in most cases in ten days but may be delayed for weeks, during which time the patient suffers from physical and mental fatigue, dyspnoea, palpitation, and sleeplessness and mental depression. The various types of the disease are discussed in detail.

*Respiratory Type.*—This is by far the most common manifestation of influenza. The disease may implicate one, several, or all of the respiratory structures, including the accessory sinuses. Some of the affections require special mention. Influenzal bronchitis may be localised or may involve the whole bronchial system. In influenza there is a special tendency to involvement of the terminal bronchioles. Patients have sibilant and sonorous ronchi which give place in a day or two to fine crepitations. These may persist for days and may be heard over one or more lobes, often at the apices. There is no evidence of consolidation. The sputum remains bronchitic in character.

This type of disease is particularly dangerous in infancy and in old age. In the latter there is a swinging temperature, weakness, cyanosis, emaciation, collapse, and death.

Influenzal pneumonias present a varied clinical and pathological picture. The influenza bacillus is often the causal organism, but pneumococcal and streptococcal infections are common. The pure influenzal pneumonia is definitely a catarrhal one which has a tendency to involve the lung in disseminated patches, more particularly in its upper lobes, though it may be confined to the upper. It may follow bronchitis or may be a primary alveolar infection. During outbreaks of influenza there is a great increase of lobar pneumonia. Whether this is initiated by the influenza bacillus which is later outgrown by the pneumococcus is unknown. Clinically, this lobar pneumonia does not differ much from that seen in the absence of influenza epidemics. It is

usually of longer duration, and is more likely to subside by lysis than by crisis. The sputum is never rusty. It is composed of greenish clumps surrounded by sticky mucus.

There is a type of broncho-pneumonia which may start as a disseminated bronchitis. There are patches of consolidation all over the lungs. In a week or ten days all the signs have disappeared except consolidation at the apices. Fever is constant, there are sweats and weakness with emaciation. There is great difficulty in distinguishing such cases from tuberculosis. The sputum may become blood-stained or even hæmorrhagic. After weeks or months the condition ameliorates. The cough lessens, the temperature does not reach its former height, the sputum lessens, breath sounds become vesicular and strength returns. It is probable that a large number of these cases are regarded as pulmonary tuberculosis with negative sputum even by experts.

Some cases of influenzal broncho-pneumonia go on to purulent infiltration with bronchial dilatation and usually die, but may escape with a fibroid induration of the lungs.

A few cases of lobar pneumonia follow a similar course. Involvement of the pleura as a primary manifestation of influenza is a rare condition. It may occur as a secondary invasion and is often purulent.

*Cardiac Type.*—Bradycardia is common, probably due to the susceptibility of the cardiac nerves to the influenza toxin. The heart muscle itself is also subject to the toxins, as witnessed by the fatty degeneration seen on pathological examination. This may account for the attacks of syncope and other circulatory disturbances. Primary influenzal endocarditis and pericarditis have been observed but are very unusual. There is a definite form of endocarditis to which no attention has been drawn since the great epidemic in 1890. This is a subacute or chronic affection due to the bacillus which can be isolated from the blood. Heart valves which have been previously injured are specially liable to attack. The clinical picture is an endocarditis with bacteræmia. There are erythematous rashes, and rarely these may ulcerate.

*Nervous Type.*—Nearly all cases show some disturbance of the nervous system, either toxic or functional. In the pandemic type of the disease meningitis, encephalitis and myelitis have been observed. Polyneuritis is not uncommon. Encephalitis may result from direct cerebral infection and may show as numerous small hæmorrhages with necrosis and secondary miliary abscesses, or it may show as a purulent infiltration resulting from sinus inflammation or meningitis. Meningitis is not uncommon, but it may be simulated by a condition showing Kernig's sign, delirium, and rigidity of neck muscles as a result of the toxæmia.

*Gastro-Intestinal Type.*—These symptoms are common in the pandemic type, but are more rare in the epidemic and sporadic forms of the disease. The symptoms are toxic rather than inflammatory. Nausea,



vomiting, and prostration are dominating symptoms. There may be excessive diarrhoea and colic, and symptoms may closely resemble typhoid.

A. G.

## SURGERY.

UNDER THE CHARGE OF

J. W. STRUTHERS, F.R.C.S., D. P. D. WILKIE, F.R.C.S.,  
AND JAMES M. GRAHAM, F.R.C.S.

### FASCIA TRANSPLANTATION INTO VISCERAL DEFECTS.

THE advantages of fascia as a tissue for transplantation are very considerable. It has a great tendency to heal in place and requires only a minimal blood-supply for its nourishment. It is readily obtained in almost unlimited quantities, with little or no detriment to the patient, and autoplasmic transplantation can be employed invariably. Fascia has great tensile strength, has little tendency to stretch or shrink, and is easily adapted to the surfaces of any organ.

Sheets of fascia have been used (1) to fill gaps at operations for hernia, with satisfactory results. (2) For defects of the cranial dura. (3) For thoracic defects. The few recorded results have been excellent. (4) For wounds of solid organs such as the liver, spleen, and kidney. Large bleeding areas in the liver have been satisfactorily covered over by fascia in several instances. (5) For isolation of nerves. It has been shown, however, that adhesions between the transplant and the nerve may form. (6) For reinforcement of blood-vessel sutures and for occlusion of aneurysms. Experiments have shown that sheets of fascia are strong enough to maintain stenosis of large arteries. (8) For interposition in anchylosed joints.

Strips of fascia have been used—(1) To replace or reinforce ligaments, tendons, or paralysed muscles. (2) To suspend the kidney. In a few cases a similar method has been employed in ptosis of the liver and spleen. (3) To occlude the pylorus. Ligation of the pylorus with strips of fascia does not always give permanent closure, although some satisfactory clinical reports have been published.

The ultimate fate of transplanted fascia has not been definitely determined. In the presence of sepsis early disintegration can be expected; in aseptic cases degeneration probably takes place later, the transplant being replaced by firm connective tissue which, however, is as serviceable as the original.

Fascia has been employed to reinforce weak suture lines in organs like the stomach and the bladder with encouraging success; it has also been used to replace defects in hollow organs, with hitherto very limited success.



In order to study the possibilities more thoroughly of the replacement by fascia of defects in hollow organs Neuhof (*Surg., Gynec., and Obstet.*, April 1917) has carried out a long series of experiments which have yielded much more satisfactory results than could have been anticipated. The experiments were performed on dogs.

The essential point of technique adopted was the suture of the transplant into rather than over the defect in the hollow viscus or other organ. The transplant is preferably taken from the fascia lata, and it should be cut slightly larger than the defect to be filled. Four fixation sutures are inserted at equidistant points to ensure accuracy in stitching, for which continuous sutures of fine silk are used. The stitches should be inserted through all the layers of the cut edge of the organ, and the bite taken through the fascia should be somewhat larger. Previous failures have been due to differences in technique and chiefly to stitching the fascia over the gap and to necrosis of limited areas of the gap in the viscus caused by ligation of bleeding points. No ligature should be applied; the continuous sutures should be hæmostatic and the stitches placed at intervals of 2 or 3 millimetres to avoid devitalising the tissues. When these details are attended to a successful result can usually be anticipated and the mucous membrane will grow over the deep surface of the transplant.

Large vesical defects up to about one-half of the bladder wall were replaced by fascia with uniform success and the functional results were excellent. The newly formed bladder wall becomes as thick as the normal and equally resistant to pressure. A notable fact is the early epithelial overgrowth of the mucosa at the edge of the defect. An interesting feature also was the development of bone with bone-marrow as a result of metaplasia of the connective tissue-cells. The presence of muscle fibres was also noted in the area of the graft and these were continuous with the muscle of the bladder wall.

Large defects in the trachea were invariably replaced successfully, the anatomical result being ideal, as ciliated epithelium grew completely over the surface of the fascia.

Large œsophageal defects were replaced successfully in all experiments.

The results of the experiments to replace defects in the stomach were particularly interesting. Perforation of the transplant always followed its simple implantation to fill a gastric defect. On the other hand, smooth healing always occurred, even with large defects, when gastro-enterostomy, with or without pyloric occlusion, was added. This observation strikingly demonstrates the profound influence of gastro-entèrostomy upon the healing of gastric lesions. In the latter group of cases mucosa completely covered the inner surface of the grafts.

In the case of the intestine it was found that fascia transplantation

was only occasionally successful in the upper part of the small intestine, succeeded more frequently in the lower part, and was most successful in the large intestine.

The author has further succeeded in applying the technique of his experiments in two clinical cases. In one case a large defect of the urethra was satisfactorily and simply replaced by fascia, in the second case a large tracheal defect was successfully treated in a similar manner.

#### THE RELATIVE MERITS OF CHOLECYSTOSTOMY AND CHOLECYSTECTOMY.

The discussion as to whether cholecystectomy or cholecystostomy is the better procedure has been maintained since the earliest days of gall-bladder surgery.

Charles Mayo (*Surg., Gynec., and Obstet.*, March 1917) finds that there is a use for each method, cholecystectomy, however, being indicated with increasing frequency. That ordinary good health is compatible with removal of the gall-bladder is confirmed both by clinical and experimental experience. Ten patients, on whom the operation of cholecystectomy was performed more than fifteen years previously in the Mayo Clinic, have remained in excellent health.

As regards the function of the gall-bladder, it is believed to act as a reservoir, with a capacity of dilating to contain several ounces, which contracts rhythmically from eight to ten times a minute, and pumps bile intermittently into the intestine, overcoming the sphincter action of the ampulla.

Gross contamination of the common bile duct by the contents of the duodenum is a mechanical impossibility; the intestine will rupture if distended, without causing any reflux.

As it is generally admitted that gall-stones form as the result of infection within the gall-bladder it is instructive to inquire as to the source of the infection. Most observers believe that organisms reach the gall-bladder through failure of the function of the liver, and that attenuated but living organisms, brought to the liver by the portal vein, are excreted with the bile and directly infect the mucous membrane of the gall-bladder.

Mayo believes it unlikely that a healthy mucosa can be readily infected from organisms carried by the bile, and quotes recent researches by Rosenow which seem to show that the infection of the gall-bladder is due to bacteria brought directly to the walls of the gall-bladder by the blood-stream. As the result of a blood infection infiltration, thickening, and necrosis of the mucosa may result. In support of this theory it has been shown that, in acute and subacute inflammations of the gall-bladder, cultures of bacteria can be made only occasionally from the bile, but regularly from the depths of the tissues. In cases

where the gall-bladder has been infected enlarged glands may be felt in relation to the hepatic, cystic, and common ducts. These glands may vary in number from three to six, and some experience is needed to avoid mistaking enlarged for normal glands.

In addition to cholecystitis resulting from infection, stagnation of bile and excess of cholesterol are important factors in the production of gall-stones.

Cholesterol is an important constituent of gall-stones, and it is found to be increased in the blood of adults with excessive cell growth, whether cancerous or embryonic. It is known that 75 per cent. of gall-stones occur in women and that in 80 per cent. of the cases the first symptoms develop during pregnancy.

The symptoms produced by gall-stones may depend entirely on the cholecystitis present. Any temporary stasis of the bile, such as is due to the dyspepsia with increased duodenal pressure following certain kinds of food, may cause pain if the capacity of the gall-bladder is reduced. When the original cholecystitis which preceded the formation of stones has subsided temporary distension of the gall-bladder causes no pain, and the patient will have no symptoms unless the cystic duct becomes blocked by a stone. In cases of gall-stones therefore, without cholecystitis, the removal of the stones and cholecystostomy should give a high percentage of cures; in other cases where the gall-bladder is altered by cholecystitis, simple drainage is often insufficient, and the indications for cholecystectomy should be accepted as a general principle.

It should be recognised that at least one-fourth of the gall-bladders which cause symptoms do not contain stones. Colic may be produced by obstruction, by balls of mucus or thick bile, or by temporary distension of a diseased gall-bladder.

Cholecystectomy is indicated in cystic dilatation of the gall-bladder with destroyed mucosa, in empyema, and in the functionless strawberry gall-bladder. It is indicated also if cholecystitis is the cause of the symptoms, as temporary drainage is unlikely to get rid of the infection in the wall of the gall-bladder. When the gall-bladder is responsible for marked stomach symptoms it should be removed, whether stones are present or not.

Cholecystostomy is indicated when the evidence of disease is slight, stones are present and gastric symptoms are absent. In treating cases of pancreatitis cholecystostomy is advisable. Unless there are marked symptoms to the contrary cholecystostomy should be preferred in old people and during pregnancy.

In performing cholecystectomy the cystic duct should be isolated early and the common duct should be seen before division of the cystic duct. There is a danger in dividing the cystic duct too close to the common duct, as a permanent biliary fistula may result. The cystic



artery also must be carefully ligated. It is similar in size to the artery of the thyroid, and many deaths have resulted from slipping of the ligature.

Adhesions of the pylorus and duodenum to the liver or gall-bladder often prevent the patient from receiving the full benefit of the operation, even though the pathological condition has been satisfactorily treated. If, before closing the incision, fat does not intervene between these structures, an apron of fat should be developed by suturing the fatty round ligament or the gastro-hepatic omentum to the outer edge of the gastro-colic omentum, drainage being arranged for between this fat and the liver.

Out of a large number of cases on whom cholecystostomy had been performed, 53 per cent. were cured and a large majority of the remainder were improved. Of those who had had cholecystectomies 71 per cent. were cured and a large proportion improved.

During eleven months preceding October 1916, 43 cholecystostomies were performed with a mortality of 14 per cent., 776 cholecystectomies with a mortality of 1.77 per cent., and 102 choledochotomies with a mortality of 7.84 per cent.

#### A SUCCESSFUL CASE OF SUTURE OF THE HEART.

Prat (*La Presse Médicale*, 5th April 1917) reports to the Société de Chirurgie the case of a soldier who had accidentally received a stab wound from a knife over the præcordium. The patient was admitted to hospital one hour and a half after being wounded, in a moribund condition. Operation was performed at once, the pericardium being exposed by turning outwards a flap. The lung was found uninjured and there was not much effusion of blood in the pleural cavity. The pericardial sac, however, was distended with dark blood, which oozed out through a punctured wound situated near the base of the heart. After incision of the pericardium and evacuation of clots bleeding was found to proceed from two sources. An artery lying in the groove between the ventricles had been divided and required double ligation. In addition a wound was present in the right auricle, which was closed with two looped catgut sutures. After closure of the pericardium the pleural cavity was dried and the wound closed without drainage; the temporary pneumo-thorax due to the operation was treated by aspiration.

The only complication in the subsequent progress of the case was the occurrence on the fifth day of a secondary hæmothorax due to bleeding from a parietal vessel.

The patient made a rapid recovery, and four months after the operation auscultation of the heart was perfectly normal.

J. M. G.



## PATHOLOGY.

UNDER THE CHARGE OF

THEODORE SHENNAN, M.D., AND JAMES MILLER, M.D.

## THE RELATION OF INJURY TO GROWTH OF TUMOURS.

THE possible influence of mechanical injury upon the development of independent new growths or tumours, not only in the area directly subjected to the action of the injury, but also in tissues at a distance from it, is a question which, sooner or later, every practitioner has to consider, and he may have to give his opinion on the subject in a court of law.

When a tumour originates at or near the site of the injury, one has to admit the possibility, or even the probability, that some connection exists between the injury and the new growth; but, on the other hand, it is sometimes extremely difficult, if not impossible, to give satisfactory reasons—that is, reasons satisfying the legal mind—for one's belief that a new growth has no relation to a previously occurring mechanical injury affecting a part at some distance from it.

On the general question of the relation of injury to tumour growth a paper by F. Pentimelli, upon "Lesions of the Tissues as Factors in the Development of Experimental Tumours," is of interest (*Lo Sperimentale*, August 1916, p. 337).

Rous (*Journ. Amer. Med. Assoc.*, 1912) found that positive results from inoculation of Berkfeld filtrates of fowl sarcoma into the pectoral muscles of the hen were more easily obtained if a little diatomaceous powder were added to the filtrate before injection. Though Podwyszozki had long previously observed that injection of this powder provokes by its mechanical irritation an active proliferation of the tissue elements, Pentimelli formed the opinion that the higher percentage of positive results following inoculation of a filtrate of tumour mixed with powdered diatoms ought to be ascribed to the stronger reaction of the tissues. And, indeed, when the causal agent of the tumour is introduced into the fowl's tissues contained in the tumour tissue alone, dried, and finely powdered, a positive result is obtained in a large proportion of cases; under such conditions the tumour arising on a basis of strong inflammatory reaction induced by the inoculation of the dried material.

Introduction of the material into the circulation produces similar results. Rous had four positive results out of 17 cases after injecting a large quantity of filtrate only, but seven positive results out of 20 cases, on injecting filtrate mixed with diatomaceous powder.

Pentimelli's results were different. On injecting either filtrate or dried and powdered tumour suspended in Ringer's fluid no visible

tumours developed in any of the organs of twenty-five cockerels, and microscopical investigation of the organs failed to show any indication of any change of that nature. The tumour employed in his experiments produced new growths when inoculated into the pectoral muscles of control animals. It was otherwise when the virus was injected into the circulation of adult hens. In these he obtained six positive results out of fourteen animals, and in cases in which the tumours were not widely diffused it was possible to judge that the primary growth had developed in the ovary, that is, in an organ which is the seat of frequent proliferative changes. "The histogenetic analysis of the origin of sarcoma in the pectoral muscles has convinced me that the action of the virus is not explicable on the ground of its influence upon the normal connective tissue cells of the intramuscular planes, but upon its action on the young connective tissue cells derived from these, and on the undifferentiated elements of the muscle fibres, produced during the regenerative or inflammatory process which follows the inoculation of the exsiccated material."

"Moreover, the greater number of positive results obtained by Rous on addition of diatomaceous powder is better explained by the inflammation which this substance provokes in the tissues. Now, if the condition favourable to the development of sarcoma be the proliferative state of the connective tissue cell, we should be able to demonstrate an elective action of the sarcoma virus upon these cells which are found in an undifferentiated condition, and not upon others." Pentimelli conducted experiments in which he injected the sarcoma virus into the circulation of animals in which he had previously produced lesions in various organs. He performed a primary laparotomy, and cauterised portions of liver, kidney, and pectoral muscles; then two, three, four, and six days later he injected, intravenously, exsiccated sarcoma suspended in Ringer's solution. As a result, he found that tumours developed at the injured points, with some exceptions, such as the kidney. But he noted that fewer tumours developed in the cases in which a longer time had elapsed between the injury and the inoculation. All the tumours employed were proved to be virulent by successful inoculation into the pectoral muscles of control animals. Spindle-celled sarcomas developed, even in injured epithelial organs, these being presumably unable to resist the abnormal stimulus of the sarcoma virus, acting solely on mesenchymal and mesodermal undifferentiated cells. Drying of sarcoma gallinarum apparently kills the cells, but does not destroy the filterable virus, which is the active agent. The author claims that the tumours produced are true tumours, as shown by their histological structure, and by the results of transplantation into other animals.

Though some of the claims advanced by the author require further proof and verification, his results are of interest, as already remarked,

in relation to the general question of the connection between an injury in the human subject and a tumour developing at a later period.

ERYTHEMA NODOSUM AND SYPHILIDES (Chauffard and Le Conte, *Ann. de Méd.*, 1915, No. 6; ref. in *Il Policlinico*, 1916, No. 35, Sez. prat. p. 1052).

Numerous recent investigations have modified by degrees the conception of this dermatosis. To the rheumatic theory succeeded for a time the theory of alimentary intoxication, and to this the infective doctrine. Erythema nodosum, as it were, took its place in the picture of infective nodules of dermis and hypodermis, and the greater number of authors maintained that it had a multiple derivation. To these Poncet added tuberculosis. As a matter of fact, its association with tuberculosis had for long been noted by clinicians, sometimes one, sometimes the other, appearing primarily on the scene. In 1907 Landouzy regarded erythema nodosum as dependent on a (tubercle) bacillary septicæmia, at one time attenuated, at another evolving with the type of a typho-bacillosis. Some recent Italian observers look upon the disease occurring in tuberculous subjects, as a toxic manifestation, partly because of the constantly negative results of the search by cultivation for tubercle bacilli in the circulating blood, and partly from the negative results of animal inoculation. These results are not sensibly affected by Landouzy's finding a single tubercle bacillus in an inflamed vessel within a nodule. In 1909 Chauffard and Troisier observed that, in a patient with developing erythema nodosum, the intradermo-reaction produced identical nodosities. This is in agreement with the toxic theory of its etiology. With reference to the relation to the disease of syphilis, about thirty-five years ago, before its tuberculous nature was thought of as a possibility, Mauriac published some observations on syphilitic erythema nodosum. He showed the morphological similarity of the nodules to syphilitic gummata, the two conditions differing in their modes of resolution. Most authors admit the specific nature of these erythemas, others see nothing more than a coincidence. None suggest that the disease may be the result of a tuberculo-syphilitic symbiosis. This is the view proposed by the authors of this paper, who give examples of the co-existence of erythema nodosum with a recent secondary syphilide in full evolution. The first eruption, which was severe and prolonged, appeared before any treatment by mercury or arsenic was adopted. Three others supervened on the injection of neo-salvarsan, 0.6 grm. The nodules were bright red, slightly purple in colour, quite different from that of characteristic specific papules, and they disappeared, leaving no trace.

The patient had old consolidation at the left apex, and a double

chain of tracheo-bronchial glands. The cuti-reaction was positive, even nodular. They concluded that the erythema nodosum was of tuberculous origin, provoked during the evolution of the secondary skin lesion, that is, so far as the first nodules were concerned. For the later nodules provoked by the neo-salvarsan two explanations are possible—first, the action of the syphilotoxin liberated by the action of the neo-salvarsan upon the treponemata, this causing a renewal of the tuberculous bacillæmia, but this explanation seems to be contradicted by some of the facts; secondly, it is possible that the intensive form of the arsenical medicament may have produced the phenomena noted.

#### TUBERCULOSIS OF THE TONGUE.

L. Durante (Mayo Clinic, Rochester, U.S.A.) discusses the prevalence of tuberculosis of the tongue (*Il Policlinico*, October 1916, p. 302).

To judge from the number of reported cases in which it has been detected at the post-mortem examination, or diagnosed during life, tuberculosis of the tongue is rare. Willigt found it twice in 1317 post mortems, Fowler four times in 832, Fischer thrice in 1500, Chiari twelve times in 625, and Adami did not meet with it once in 417 post-mortem examinations.

Durante has collected all the cases (250) reported up to 1915. He states that two reasons are given for its infrequency—first, the resistance of the mucous membrane of the tongue to the penetration of tubercle bacilli; and, second, the natural resistance of striated muscle to the settling down of the bacilli. The latter action is put down by some authors to the antibacterial and antitoxic influences exercised by glycogen against all bacteria in general, and against the tubercle bacillus in particular—an action demonstrated *in vitro* by Teissier; by others to the constant fibrillary contraction of muscle which interferes mechanically with the development of bacteria.

The ages of those attacked varied from twenty to fifty years. Local irritation—as, for example, from decayed teeth—acted as a predisposing factor, particularly in the male.

It was not always possible to determine the manner of invasion—whether by the blood, or lymphatics, or by direct inoculation, or by extension from the neighbourhood. Tuberculosis of the tongue may be primary, as seen in the cases reported by Fazirlic and Schliferowitsch, and many others have been diagnosed clinically; but the majority of cases are secondary.

The disease presents itself in two forms. The first assumes characters like those of lupus of the skin, beginning as a greyish patch, somewhat projecting on the surface, with no surrounding inflammatory reaction, hard, composed of a group of small miliary nodules, which



may preserve the sclerotic character—glosso-dermatitis tuberculo-fibrosa—or may become ulcerated—glosso-dermatitis tuberculo-ulcerosa. The lupous lesions of the tongue are always accompanied by similar lesions of the buccal mucosa, of the nose, or of the skin of the face, and is a comparatively rare complication.

The second variety arises when the lingual parenchyma is attacked in the first place, or, more correctly, the intramuscular connective tissue of the tongue, because the tuberculous myositis is always secondary to tuberculosis of the connective tissue. This form results in a confluent tuberculous process, producing a single nodule, or tuberculous granuloma, yet it may spread so that one may speak of disseminated miliary tuberculosis, or multiple nodular, or caseating tuberculosis. Whichever form the disease takes, it may remain for months or years, simulating neoplastic growths, or lesions of tertiary syphilis; or it may undergo early necrosis and softening—cold abscess of the tongue—and may evacuate its contents with the formation of a large ulcer or a fistula.

The typical tuberculous ulcer has irregular sinuous, soft, reddened margins, and yellowish base, covered with granulations which bleed easily. It may appear in any region of the tongue, most frequently at the edges and at the tip. The lymphatic glands on both sides are swollen and tender.

Warty types are also described, but so far no pseudo-neoplastic forms have been reported, such as are occasionally encountered at the pylorus, at the ileo-caecal opening, and in striated muscle.

Histologically these conditions present characters typical of tuberculosis elsewhere. Full references are given to the cases on which the paper is based, and the author reports five others from the Mayo Clinic, giving full descriptions of the microscopical characters of the lesions which were present.

#### TYPES OF LESION IN CHRONIC PASSIVE CONGESTION OF THE LIVER.

In the *Johns Hopkins Hospital Bulletin* (December 1916, p. 359) Lambert and Allison refer to some new views on the changes which occur in the "nutmeg" liver. Similar opinions are held by MacCallum (*Text-Book of Pathology*, 1916, p. 469), in whose laboratory the work was conducted. They refer to the fact which is well known, that different livers showing apparently identical naked-eye appearances may show striking histological differences. From examination of 112 fresh or preserved specimens of liver presenting the "nutmeg" change, they find that microscopically they can be divided into five "types"—(1) Capillary dilatation, with narrowing and elongation of the liver cell columns (so-called pressure atrophy); (2) central degenerative change, with or

without congestion; (3) central fat accumulation, with hyperæmia or necrosis of the intermediate zone; (4) central necrosis, usually associated with hæmorrhage; and (5) collapse fibrosis in the central part of the lobule.

In the first type of case the microscopical picture is that "described in many text-books" as characteristic of marked passive congestion, and is the lesion on which was based the idea that the liver cells in extreme stasis disappeared as the result of pressure. In the second type usually about one-half or more of the lobule is involved. The affected cells are reduced in size, often finely vacuolated and pigmented. The capillaries may not be dilated; they even may appear narrowed, "apparently as the result of a subendothelial accumulation of fluid (œdema)." This lesion is not associated with any particular disease of the circulatory system. It occurs in cardiac valvular disease, myocardial fibrosis, chronic nephritis with heart failure, pernicious anemia, and severe acute affections. Type (3) shows a central area of large fatty cells, with well-preserved nuclei, the capillaries scarcely visible. In the intermediate zone the capillaries are widely dilated, and there are not infrequently foci of necrosis with hæmorrhage. Heinrichsdorff describes the gross appearance—a tiny yellow spot, in which the central vein is scarcely visible, forms the centre of each lobule, and immediately surrounding it is a red zone or ring (hence the name "ring necrosis"), and outside that healthy liver parenchyma about the portal spaces.

In the fourth type, the centre of the lobule under a low power looks like a homogeneous mass of fresh blood. Under higher magnification, fragments of necrotic liver cells and the surviving reticular fibres can be made out. The necrosis may involve only a small area round the central zone, or extend almost through the lobe. The history of the cases concerned in producing this type is interesting. "Each of the patients had been suffering for a considerable time from heart trouble, and in some cases there was sudden heart failure."

In the fifth type each central vein is surrounded by a loose non-cellular connective tissue, in which a quantity of blood pigment is found. These were cardiac cases of long standing.

The authors claim that all these lesions may directly be due to *chronic* passive congestion, and they are supported by observations made by Mallory. All the lesions described are well recognised in this country, but they are not all placed under chronic passive congestion. Some of the changes described are generally either regarded as akin to those of acute yellow atrophy, but localised, or to those of a rapidly developing (so-called "acute") passive congestion, which is often associated with the action of a toxic substance or infective agent. When the central area of the lobule shows either a yellow spot, or a dirty grey necrotic spot, it is surely erroneous to include the condition

under the chronic passive hyperæmias of the liver. In fact, some are inclined to limit the term "chronic" venous hyperæmia to cases in which not only is there dilatation of the capillaries gradually diminishing towards the periphery of the lobule, but apparent thickening of the capillary wall, with almost complete continuity of the endothelial lining of the sinusoids, this lining being separated by a distinct, though narrow, space from the columns of atrophying liver cells.

In such cases there is not only increased pressure upon the liver cells, but also diminished nutrition of them, this having more effect the greater the distance from the hepatic artery supplying the lobule.

#### REACTION OF SPLEEN IN ACUTE INFECTIONS.

In the same number of the *Bulletin* (p. 356) Dr. Evans, from the same laboratory, contributes an article on the "Reaction of the Spleen in Acute Infections," and divides the "acute splenic tumour" into the red, soft diffuent organ, with pulp bulging on the cut surface, and the grey, soft, but not diffuent, organ, with mottled cut surface, not bulging. These two common types are well recognised, but in this instance again, most pathologists in this country will disagree with Dr. Evans when he states that the soft, red, diffuent organ is "seen in typhoid and typhoid group infections, and practically in no other condition." In conducting sections at a general hospital, with plentiful material, one frequently meets with the red diffuent spleen, but seldom with cases of typhoid, or even of "typhoid group" infection. Dr. Evans is probably more correct in attributing the grey mottled spleen, especially with prominent Malpighian bodies, to infections dependent on members of the group of pyogenic organisms. T. S.

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### DERMATOLOGY.

UNDER THE CHARGE OF

R. CRANSTON LOW, M.B., F.R.C.P., AND F. GARDINER, M.D., F.R.C.S.

#### PRURITUS ANI.

THIS condition is much more universal in its milder phases than the text-books indicate. Closely associated if not entirely due to inflammation of the sebaceous and sweat glands, and accompanied by some varicosity if not actual hæmorrhoids, the early stages yield readily to treatment aiming at the cure of these two diseases. When more severe the irritation is more intractable, and our experience agrees with that of Knowsley Sibley (*Dermat. Soc. Lond.*, 6th March 1916), who states that it rapidly improves with X-rays when all other treatment has failed. Concurrently he also applies high frequency

electrical methods. The one objection is the possibility of sterility occurring, but this is only temporary at the most. Dwight H. Murray (*Urol. and Cut. Rev.*, 6th March 1916) reports on 25 further cases, making in all 123, of which 95 per cent. showed streptococci as the aetiological factor. Excellent results are obtained in his hands by the exhibition of autogenous vaccines of over 1000 millions to 1 c.c. Some cases have to be more carefully treated with a mixed vaccine containing staphylococci as well as streptococci. We concur in his belief in the inadvisability if not absolute uselessness of Ball's operation.

Stone (*Johns Hopkins Hosp. Bull.*, September 1916) recommends strongly the employment of alcoholic injections.

The whole area is anaesthetised with 1 per cent. of novocain or 1 per cent. quinine and urea and then 95 per cent. alcohol introduced into the subcutaneous fat. All the pruritic areas up to the margin of the anus must be injected, and it is essential that the needle should move freely in the fat or a slough will result.

He also deprecates surgical methods.

#### T. N. T. DERMATITIS.

The reports of this condition are important at the present time. Livingstone Learmonth and B. Martin Cunningham (*Lancet*, 12th August 1916) describe the eruption as affecting the hands, face, and less frequently the neck. The localisation is what one would expect, as also the fact mentioned that it is most severe in the case of patients who perspire profusely. On the hands the lesions are bullous or vesicular, resembling cheiropompholyx; on the face they are more distinctly papular, red in colour or an irregular blotchy erythema. The irritation is severe and desquamation follows.

#### LEUCOCYTHEMIA CUTIS.

This rare condition is so apt to be overlooked or mistaken for such a condition as syphilis that the full description and splendid plate coming from the hands of Batty Shaw and D. Loughlin (*Roy. Soc. of Med. Lond.*, November 1916) is a desirable acquisition. The case was that of a labourer aged 37, who complained eight months previously of pains in the joints and back, which were succeeded by purple patches on the body a few days later. Three months later some ulceration appeared over the sacrum, and a month after this small nodules, progressively increasing in number and size, appeared on the body, limbs, and face.

On admission his temperature ran from 100° to 102° and his facies suggested the leonine characteristics of leprosy.

The nodules were painless, not deeply attached, movable, and



occurred all over the body except the ears, eyelids, elbows, knees, hands, and feet, some of the lesions being purple, others red or pale pink. The glands in the groin were enlarged. The Wassermann reaction was negative.

Blood examination from time to time showed during his sojourn in hospital:—

R. C. increasing from 830,000 to 1,800,000; Hb increasing from 15 to 35 per cent.; colour index increasing from 0.65 to 0.98.

The red cells showed vacuolation and poikilocytosis, macrocytes were sometimes present, microcytes always present, nucleated red cells were seen on two occasions.

White corpuscles varied from 3500 to 6200, and the average differential count was 56.2 small mononuclears, 6.4 large mononuclears, and 37.4 polymorphs.

Sections of skin removed showed leucocytic infiltration of the true skin with chronic lymphangitis of the reticular layer.

The man died subsequently, and before death the tumours had enlarged greatly.

#### MULTIPLE IDIOPATHIC HÆMORRHAGIC SARCOMA.

Like favus this disease, according to Parkes Weber (*Brit. Journ. of Dermat.*, 6th March to December 1916), is most commonly seen in Polish Jews, but fortunately it does not seem, like that affection, to have spread to other sections of the community. Three cases are recorded and the resulting conclusions are drawn from these and other reports.

In this country the male Polish Jew is almost exclusively the victim and most commonly the lower limbs seem to be first attacked, although the upper limbs very frequently and the trunk less often may exhibit the eruption. The average age is 40 to 50, although it has been noted as occurring at 70 and 22.

Syphilis and alcoholism seem entirely unconnected with the outbreak, and gout, although considered as a factor by some authorities, is not so in Parkes Weber's opinion.

On the Continent the prognosis is bad, the afflicted individuals often dying of metastases in viscera, but in this country cases last many years (two to twenty) and often show retrogression and involution of the tumours.

Gilchrist and Ketron's microscopic findings are: "That the lesions begin in the skin as angiomata due to a proliferation and dilatation of the blood capillaries which are very frail at first and liable to rupture." Subsequently spindle connective tissue-cells form and, as the tumours grow older, sclerosis of the small arteries may occur and cause involution. Shattock reports on sections of two of the cases that "the

microscopic appearance is best regarded as evidence of irritative proliferation of the connective tissue-cells and that this takes place near small blood-cells, the walls of which participate in the proliferation process."

Of importance is the fact that lymphatic glands are not involved. The balance of evidence in his opinion points to a local microbic infection, and in support of this he records that several cases have been noted as following a trauma. One case originated also near a birth-mark.

Knowsley Sibley (*Roy. Soc. of Med. Lond.*, July 1916) gives details of a case aged 19 in which the right leg was involved, and on the same limb there was an extensive superficial nævus.

It is worth while also to recall the case recorded by Sequeira of the same society in March 1914. The feet, ankles, wrists, and backs of hands showed lesions, and the treatment of each part with a total of 50 H. units of X-rays through an aluminium screen 0.2 mm. thick has resulted in cure. No reaction supervened; the skin became normal and only some brown staining was left.

#### RELATION OF DIETS TO SEBORRHOEA.

Much valuable spade-work in connection with the dietary of skin diseases is being carried out in America, and Douglass W. Montgomery's contribution (*Amer. Journ. of Cut. Dis.*, December 1916) is a very important addition. The skin is an enormous fat organ, the fat extending through all the layers, and clinically he says it seems as if in seborrhœa the entire fat undergoes change and that this change interferes with proper cornification.

The main features of seborrhœa then are:—

1. Accentuation of the openings of the pilo-sebaceous follicles.
2. A dirty-greyish or tawny yellow discoloration and often greasiness of the skin.
3. A slight thickening of the integument.

Where any organ is preponderatingly engaged in the storage or secretion of any class of foods it is natural to suspect that abuses in the intake of these foods may account for some of the aberrations of that organ.

The skin is an organ dealing with fat, and the fat-producing foods are (1) fats and (2) starches and sugar, and these he proceeds to analyse as regards their rate of diffusibility, rate of absorption and relative susceptibility to fermentation.

*Starches.*—It takes 5 hours or longer for these to be fully converted into dextrose and absorbed. In a properly proportioned meal dextrose partly derived from starch and partly from sugar is absorbed from the bowel and delivered to the liver in manageable quantities. Starches

vary and potato starch is larger, therefore being less suitable than cereal. He considers that potatoes should be as carefully restricted as sugar is in any case where the patient is suffering from an overabundance of easily convertible carbohydrate. (This should comfort the soul of the Food Controller.)

*Sugars.*—Each of these has its own rate of diffusibility. Lactose is specially interesting because of infant rearing—it is very slowly diffusible and splits into galactose and glucose, each with a different rate of absorption. This allows for a slow delivery to the liver during a reasonable time between meals. Lactose, however, has still another property, like all sugars it is antiputrefactive but is first in the list—glucose, mannite, and galactose being next.

Fruit sugars are usually well borne and when mixed with starches give them an attractive flavour—they are, however, powerfully sebegogic and are the occasion of many individual idiosyncrasies.

*Saccharose.*—The principal members of this group are beet sugar, and cane sugar; they are very soluble and quickly absorbed. Sugar, like water, when prevented from entering the portal circulation goes by way of the lymphatics and the thoracic duct, and when so short-circuited is probably not so elaborately digested, and might be more irritating and sebegogic. In this connection it is interesting that many patients suffering from seborrhœic eczema have a more or less demonstrable enlargement of the liver.

Sugars like these also retain water for their own solution and so retard the absorption of the rest of the dietary and promote constipation with the resultant fermentation and blockage of the liver.

*Fats.*—Fats also have different melting points and different rates of absorption. When the fat of an animal is ingested in its natural combination with meat it is enclosed in a membrane which has to be digested off before the fat is freed. Slow in leaving the stomach—emulsification has subsequently to take place in the intestine, and as a result there is slow absorption.

*Milk* is practically a fat emulsion, and as there is no animal membrane it is more speedily absorbed. Cream and butter, as more concentrated, are still worse. After a full fatty meal a man feels indisposed for exercise, and therefore little oxygen is taken in to burn up the fats, and what little is taken in is used up at the expense of the carbohydrates, and the fat either ferments and gives rise to irritating fatty acids or is shunted directly into the adipose tissue. The fats thus secreted subsequently out of the sebaceous glands are more susceptible to bacterial attack than the usual cholesterol esters which are resistant to the influence of micro-organisms.

*Alcohol and the Products of Bacterial Fermentation.*—Ethyl alcohol is a vaso-dilator and a powerful sebegogue: it therefore flushes the skin and makes it greasy.

He quotes Darier's statement that all the products of bacterial fermentation practically are vaso-dilators and that therefore intestinal fermentation, with the usual constipation, produces flushing, erythema, and the phenomena of seborrhœa. Derived from starch and sugar, alcohol probably acts like these, only is more readily absorbed, but it also, being more readily oxidised, saves starches, sugars, and fats from oxidation leading to their short-circuiting in the imperfectly altered form into the lymphatics and thoracic duct, and thence to the repositories of the skin.

*Oxygenury.*—To get abundant oxygen into the tissues the hæmoglobin must be in good order and sufficient exercise taken—if this is not satisfactory the carbon elements in these foods are not sufficiently burnt up.

*Frequency of Seborrhœa.*—This is well recognised and it also so happens that the abuse of seboeogic foods is very general.

Milk fat, both as cream and butter, is very attractive and excess of sugar and alcohol is often taken. Besides there is the prevalence of constipation, intestinal fermentation, and toxæmia and anæmia.

"It may be said that the modern civilised man always has a gastro-intestinal catarrh, and from his sedentary habits and occupations he frequently suffers from a penury of oxygen, and because of this penury of oxygen he tends to select the easily split, easily fermentable, carbohydrates and the easily absorbable fats, and these are the very foods that favour seborrhœa."

In conclusion, he insists on attention to these points of dietary in seborrhœic patients.

The physiological chemistry of most of this paper is quite clear and accurate, but the clinical results of these logical restrictions would be still more valuable. Whole rice and butter is Bulkley's dietary, which is at times successful but not uniformly so. An open mind is desirable, but there is more in indigestion than rapidity of absorption and liability to fermentation, and external causes have probably much to do with the spread and production of seborrhœa.

Civilisation, if it implies faulty feeding, also supplies faulty clothing and faulty atmosphere. These points are not under discussion, however, and in fairness to Montgomery we may say that no doubt he appreciates that side while discussing the other.

F. G.



## NEW BOOKS.

*The Basic Anatomical Nomenclature—B. N. A.* By F. B. JAMIESON, Lecturer on Anatomy, University of Edinburgh. Pp. viii. + 91. London and Edinburgh: W. Green & Son, Ltd. 1916. Price 6s. net.

FOR good or ill the new anatomical nomenclature is with us, and while those who were brought up on the old terms may chafe at the unfamiliar names for long familiar structures, the rising generation of students will be spared much needless memorising of alternatives and the confusion arising from a multiplicity of names for the same object. Dr. Jamieson has done well to furnish us with an authoritative list of the B. N. A. terms, arranged in parallel columns with the old terminology, and with suggested English equivalents.

In the introduction he makes clear the necessity that existed for a revision of anatomical nomenclature. He points out that while the number of names necessary to designate naked-eye structures is less than 5000, under the old régime a standard text-book contained as many as 10,000, and that over 30,000 altogether are employed in the various text-books. As practically every term used in descriptive anatomy is new and strange to the student commencing the study of anatomy, it is no small gain to have his labour reduced to this extent. Many of the alternative terms formerly in use were misleading, others inappropriate, and an ever-increasing number were derived from proper names often merely of local interest, and, as Dr. Jamieson points out, historically unjust.

We confess we find it hard to part with some of the last category, whatever they may be historically. The "*ligamentum inguinale*" cannot replace Poupart's ligament in our affections, nor can we cherish the "*trigonum femorale*" like Scarpa's triangle; the ganglion semilunare is cold beside the Gasserian ganglion. We may know little of Poupart or Scarpa, and less of Gasser, but we met them when we were young, and we like them. The foramen of Monro we shall not give up. Surgeons may consent under protest to the disappearance of Hunter's canal, of Lister's tubercle, and of Cowper's gland, but they simply cannot exchange the *appendix vermiformis* for the *processus vermiformis*, even if it is still to be supplied by the *arteria appendicularis*.

When we come to analyse the list we find that after all there are not a great many really new terms introduced. Where a number of alternatives were previously employed, that of Latin origin has been made official; and this greatly simplifies matters both for the learner

and for the reader of foreign literature. For everyday use and for medical and surgical writing a translation of the more cumbrous Latin terms is permissible.

An unbiassed study of Dr. Jamieson's introductory chapter, in which he discusses the advantages of the B. N. A. without ignoring its shortcomings, will, we think, convince those who learned their anatomy under the old dispensation that the new terminology makes for simplicity and precision. It has been very generally adopted in America, on the Continent, and in the British Colonies, and in the later editions of nearly all important anatomical text-books. It is also making its way into text-books of surgery, operative surgery, and surgical anatomy. It appears to us that the time has come when any writer using anatomical terms, if he desires to be understood by a wide circle of readers and by the rising generation of students, should employ the B. N. A. nomenclature.

With the aid of the comprehensive, clearly printed, and simply arranged tables compiled by Dr. Jamieson the writer will have no difficulty in translating the old terms into the new, or the reader in reversing the process.

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*Diagnosis and Treatment of Surgical Diseases of the Spinal Cord and its Membranes.* By CHARLES A. ELSBERG, Professor of Clinical Surgery, New York Medical College. Pp. 330. 158 Illustrations. Philadelphia and London: W. B. Saunders Co. 1916.

THE present volume is a record of personal experiences in the surgical treatment of diseases and injuries of the spinal cord and its adnexa, and in order to prevent the book extending beyond its proper limits, all matter which belongs more properly to text-books on neurology or general surgery has been given the briefest mention. At the same time there is a useful summary of the anatomy and physiology of the cord and of the nerve roots for which the reader will be duly grateful. Then follow chapters on the symptomatology of spinal disease, the symptoms of spinal disease at different levels, the methods of examination, including the use of the X-rays, and the differential diagnosis of surgical spinal lesions. Part II. deals with the operations, and Part III. with the injuries and surgical diseases of the cord and its membranes.

The descriptions of the operations, lumbar and sacral puncture, and laminectomy and division of the nerve roots is given with convincing detail and abundance of illustrations.

In the description of bullet wounds in the present war it is not clearly enough stated that the cord may be irreparably damaged without the bullet having touched the cord or membranes, and that the prognosis in such cases is much worse than in the ordinary broken back with crushing of the cord of civil life.

Regarded as a whole, Dr. Elsberg's work attains a very high standard, and including, as it does, his own extensive and matured experience, we should like it to be in the hands of every surgeon before undertaking a laminectomy.

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*Military Surgery.* By DUNLOP PEARCE PENHALLOW, M.D., Harv. Pp. 432. With 151 Illustrations. London: Frowde, Hodder & Stoughton. 1916. Price 15s. net.

THE author of this attractive volume is an American surgeon whose experience of military surgery has been gained at the American Women's War Hospital at Paignton, South Devon. The material, therefore, on which his observations are founded consists of the wounded who have been evacuated from the hospitals abroad, so that many days have elapsed since the receipt of their injuries, and they have passed through many hands before reaching those of the author and his capable staff. This necessarily means that the descriptions of the wounds and of the treatment employed belong to the period of more or less chronic sepsis, and one misses the personal observation by the author of the supremely important and critical stages belonging to the early days in which the interest of surgeons is mainly centred. Bearing this in mind, our criticism of the work is of the most favourable character; the author has succeeded in giving an excellent account of the different forms of projectile and the nature of the wounds which they cause, and of the complications likely to ensue. There is a large number of good photographs and of radiograms which greatly add to the interest and to the teaching value of the book.

Sir Alfred Keogh, G.C.B., contributes a characteristic introduction.

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*The Student's Text-Book of Surgery.* By H. NORMAN BARNETT, F.R.C.S. Pp. 794. With 143 Illustrations. London: William Heinemann. 1916. Price 21s. net.

THIS text-book of surgery is written primarily from the student's point of view, but it is likely also to be of value to general practitioners. The subject of surgery has grown to such an extent in recent years that it is always difficult to keep a student's text-book within reasonable limits. In this the author has succeeded well, and while the reader will find a sufficiently full account of all conditions of practical importance, his time will not be wasted by unnecessary padding.

The chapters on many of the special subjects have been written by collaborators with special experience. It is unusual for special articles to be included in a student's manual, but it is advantageous to have authoritative accounts of subjects such as orthopaedics, the administration of anæsthetics, gun-shot wounds, the use of the X-rays, and the affections of the special senses.

An innovation is the introduction of a chapter on the surgical aspects of infectious diseases. Typhoid fever is considered from the point of view of perforation and other surgical complications, such as peritonitis without perforation, cholecystitis, bone lesions, etc. The complications of diphtheria and scarlet fever are also described.

An excellent chapter is given on hæmatology, immunity, and vaccine treatment. Indications are mentioned for the preparation of vaccines and their dosage in the common forms of pyogenic infections. A good account is given of the modern methods of diagnosis and treatment of syphilis. In describing the various affections, chief stress is laid upon the symptoms, diagnosis, and treatment. The surgical pathology of the conditions could, with advantage, be extended, as a clear knowledge of the morbid anatomy, especially in regional surgery, assists the student in understanding the symptomatology. Details of surgical anatomy and of operations have been omitted, as the author wisely considers that, to do these subjects justice, more space is required than is available in a text-book on systematic surgery.

One of the features of this book which will commend it to students is the inclusion of a chapter, extending to sixty-two pages, on genito-urinary diseases in the female. The illustrations have, on the whole, been well chosen and reproduced. A considerable number have been reproduced from other text-books, and we should like to draw attention to the fact that, in the acknowledgment to the authors of Thomson and Miles' *Manual* for the illustration on page 205, both authors' names have been misspelled. Most of the original illustrations are reproduced on a large scale, and several coloured plates are included.

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*The Biology of Tumours.* By C. MANSELL MOULLIN, M.A., M.D., F.R.C.S. Pp. 55. London: H. K. Lewis & Co., Ltd. 1916. Price 2s. 6d. net.

THE excursions of the clinician into the domain of pathology are all too infrequent. There is much that the practical physician or surgeon can teach the pathologist. We welcome, therefore, the product of the ripe experience of a surgeon of the eminence of Mr. Mansell Moullin, given to us in the form of a monograph entitled *The Biology of Tumours*.

The author anticipates criticism in his prefatory note, adding the true epigram, neatly put, that "in science, at least, orthodoxy is only the doxy of the day." Our criticism begins early, viz. in the first page of the Introduction, where we read that tumours belong "not to the same generation as the parent, but to the succeeding one." The author divides tumours, on the basis of mode of origin, into two main groups—(1) Tumours due to the revival of the primitive power of asexual reproduction (germination tumours); (2) tumours due to



defects in structural development. The vast majority of tumours, both simple and malignant, come under the first heading (germination tumours). "Such tumours are independent; they are indebted to the parent organism for all that they require in the way of sustenance: they are thus, like parasites, the offspring of the tissues in which they grow." That, no doubt, is all perfectly true, but the statement that they belong not to the same generation, but to the next, is rather difficult to follow. What, for instance, is the mass which forms as the result of the presence of a chronic irritant? It is the result of asexual cell reproduction, but surely it does not belong to the next generation.

The statement that no distinguishing line can be drawn between simple and malignant growths is one which we are much more inclined to homologate. "Malignancy is a clinical feature, and clinical features do not provide a good basis for the classification of pathological growths." That may be true, but we doubt if the author's method of classification is an improvement. Germination tumours are subdivided into (*a*) tumours of the germ organ and its derivatives: germ-cell tumours—including foetuses and teratomata; (*b*) tumours which grow from somatic cells; somatic-cell tumours, including the vast majority of growths, simple and malignant. The primary divisions are excellent, but the gathering together of all the common, simple, and malignant growths under the one heading can scarcely be regarded as helpful from the point of view of classification.

The causation of tumour formation Mr. Moullin ascribes to irritation—mechanical or chemical, or both. He gives a most interesting description of some of the growths caused by chemicals—skin cancer in arsenic workers, urinary tumours in fuchsin workers, pulmonary growths in cobalt miners. The mechanism of the production of these growths is, according to him, as follows:—The arsenic "enters into chemical combination with the substance of the cutaneous cells, work is interfered with, so that the skin becomes hard and dry; development is checked, and the young cells that are formed to replace the worn-out ones instead of attaining their full development remain upon a lower plane of evolution—a plane that was normal for their ancestors—with the same powers of reproduction and bud formation that those ancestors possessed, and only require some local stimulus to start them upon their career of growth." This local stimulus is apparently mechanical irritation, so that both factors are introduced to explain tumours of chemical origin. Mr. Moullin suggests that in the case of other growths the chemical factor may be found in bodies elaborated within the organism itself.

*The Control of Hunger in Health and Disease.* By ANTON JULIUS CARLSON. Pp. 319. Chicago: The University Press. 1916. Price 9s. net.

THIS book is in the main a summary of four years' work carried out in the Hull Physiological Laboratory of the University of Chicago, and it is no mean achievement. A large number of observations have been carried out on one of the laboratory staff, who may be regarded as a second St. Martin. As the result of swallowing a solution of caustic soda he has had a complete closure of the œsophagus since 1897, and has fed himself through a gastric fistula. The author has also made a number of somewhat heroic studies on his own person and on several colleagues. These have included periods of starvation of five days' duration, and on several occasions the author has swallowed a balloon attached to a tube and recording apparatus, and has slept in his laboratory with the apparatus *in situ*. Hunger sensations and appetite are clearly distinguished. The former are due to rhythmic contractions of the stomach, the latter is due to the smell or sight of food or memory of gustatory sensations. It is associated with the secretion of gastric juice, and its onset tends to inhibit hunger sensation. Hunger leads to an increased excitability of the central nervous system and increases the rate of the heart. The stomach is endowed with protopathic sensibility. Hunger pains persist after section of the vagus nerves, and the hunger contractions persist during sleep. It is noted that the mammalian infant, except when under the control of a pediatrician, feeds as soon as hunger sensation is strong enough to be uncomfortable and thrives on this procedure. The only benefit that may follow nursing at regular intervals might be accounted for by affording a period of rest for the gastric glands. Alcohol may stimulate appetite but diminishes hunger sensation. Smoking diminishes hunger sensation. The author could not tolerate tobacco after the second day of a fast. The chewing of indifferent substances or stimulation of the mouth by substances having no relation to food cause no secretion of gastric juice. Bitter tonics have no direct action on gastric secretion and digestion, but they may be an "efficient handmaid to psychotherapy." A remarkable sense of well-being is experienced a day or two after a prolonged fast.

The various abnormal appetites, hunger pain, anorexia, etc., are discussed. The findings are not so striking as in the more physiological field, but we are asked to accept this work as a first rather than as a final instalment. The book will well repay careful perusal. It contains some useful diagrams and tracings. Fig. 4, while serving its purpose, is somewhat amusing in its lack of scale. It shows gastric contractions being measured by a manometer of greater length and calibre than the œsophagus. We are asked to state that the volume is issued in this country by the Cambridge University Press.

*The Institutional Care of the Insane in the United States and Canada.*

By H. M. HURD, M.D. Vol. III. Pp. 880. With 34 Illustrations. Baltimore: The Johns Hopkins Press. 1916.

THIS is the third volume of a very interesting history of the development of the care of the insane in America. It carries the story to completion so far as the United States is concerned. The States included in the present volume are those from the letter M to the end of the alphabet. Naturally the older States have a longer history and occupy larger space in the volume. The first hospital for the insane in America was founded in the State of Pennsylvania in 1751, in the city of Philadelphia. In its foundation Dr. Thos. Bond, a prominent physician in that city, was largely concerned. He appealed for subscriptions for the building of a hospital for insane patients, with whom he was brought into almost daily contact during his medical work. But his appeals did not meet with much success until he enlisted the sympathy and powerful help of Benjamin Franklin. Chiefly by his exertions the State Governor was induced to grant a charter for the founding of a hospital in 1751. This hospital remained in use till 1841, when it was superseded by a new one.

Another in this State of which mention may be made is the Friends' Asylum near Philadelphia. It was founded early in the last century, though for many years before the Friends had shown their practical interest in the matter by assisting in the establishment of the Philadelphia Hospital. The Friends' Asylum owed much to the influence exerted by Samuel Tuke, who just previously succeeded in founding the York Retreat in England. There is no doubt the Society of Friends has exerted a very beneficial influence on the treatment of the insane in all the countries where they have cast their lot. In the State of New York the first institution to care for the insane was the Bloomingdale Hospital, built in 1791. This was part of a general hospital until a separate building was erected in 1808 for the sole use of the insane. This has gradually developed, until the Bloomingdale Hospital is now regarded as one of the most famous in America. It is not a large asylum, but its ideals have always been high and its influence great. The same may be said of the Butler Hospital, Rhode Island, though its foundation was comparatively late—not till 1844.

Of the Southern States, Virginia was the first to show practical interest in the insane and provide for their care. In 1769 an Act was passed to "provide for the support and maintenance of persons of unsound mind," and next year a building was completed and opened. This became the Williamsburg State Hospital. South Carolina took steps in a similar way, but it was not till 1829 that the first State Hospital was opened at Columbia.

As in the preceding volume, the particulars about all the asylums in the States considered are given in considerable detail, and many of



these are quaint and interesting. The whole book is a mine of facts and a thoroughly reliable work of reference. To complete this epoch-making work there remains only the history of the care of the insane in Canada.

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*Collected Papers on Circulation and Respiration.* Second Series, Clinical and Experimental. By Sir T. LAUDER BRUNTON. Pp. xxi. + 719. With 256 Illustrations. London: Macmillan & Co., Ltd. 1916. Price 5s. net.

IN this book, the second of the series on circulation and respiration, are collected papers scattered through medical literature from the versatile brain and facile pen of Lauder Brunton. The first series contained papers which were almost entirely experimental. Only a few of these in the present volume are of this character, the vast majority of them dealing with practical medicine, in which the results of physiological and pharmacological work are brought into relation with treatment. They cover a wide range of subjects. Some of them are short notes on the pharmacological action of such drugs as calcium, barium, and potassium on muscle, "on transverse contraction in muscle," and "remarks on snake venom and its antidotes." A few of the papers are devoted to the discussion of various problems which arose in the course of the experiments on anesthetics conducted by the Hyderabad Commission. The most of the papers, however, deal with the various disorders and diseases of the circulation and respiration which are met with in the daily work of the general practitioner. They are all delightfully written, the subjects are treated with characteristic clearness and precision, and they are full of useful hints. Some of the best of them, *e.g.* "Pericarditis," "Cardiac Disease," and "Pleural Effusion" have already appeared in the early pages of this *Journal*, and will well repay a second perusal. The subject of blood-pressure is discussed in various papers from different standpoints, and the use of nitrites and iodides naturally receives a good deal of attention in this relation. The author is too experienced a physician to run after new drugs, but he makes most excellent use of old favourites, and by his complete and accurate knowledge of their action gets wonderful results. It is long since we read such an interesting well-written volume on the therapeutics of circulatory disorders.

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*Sanitation in War.* By Major P. S. LELEAN, C.B., F.R.C.S., R.A.M.C. With an Introduction by SURGEON-GENERAL SIR ALFRED KEOGH, M.D. Second Edition. Pp. viii. + 336. With 54 Illustrations. London: J. & A. Churchill. 1917. Price 6s. net.

THIS useful little book, originally the notes of a series of lectures given by the author in the R.A.M.C. College, London, to assist military



men who had been translated from civil to medical work, has been so successful that a second edition, enlarged, amplified, and brought up to date, has been demanded, and the result is a *multum in parvo* of useful information.

Major Lelean, in a racy and colloquial style, puts into condensed form the results of an enormous amount of practical research which has been carried out by the Army Medical Service *personnel* since the fact was recognised that the efficiency of an army is infinitely better increased by the prevention of sickness than by its cure. The introduction by Sir Alfred Keogh gives the interesting information that Nelson in one of his despatches recognised this fact a century ago.

The value of the chapters, devoted to such important subjects as Physical Fitness in War, Anti-Typhoid Inoculation, Hygiene on the March, Sickness in an Army, Medical Organisation and Duties in the Field, Conservancy in the Field, Water and Water Supplies, is increased by the inclusion of an entirely new one, entitled *Some New Departures in Field Sanitation*, which consists mainly of a number of diagrams of various ingenious improvisations that have been found useful in the many areas of military operations.

The letterpress is excellent, and as the book is of a convenient size, it will be a most useful companion for any medical officer serving at home or abroad.

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*The Organs of Internal Secretion.* By GEIKIE COBB, M.D. Pp. 228. London: Baillière, Tindall & Cox. 1917. Price 5s. net.

THE author indicates in his preface that this book originated in articles in the *Medical Press and Circular* during 1916. It contains a good deal of valuable matter collated from various standard works on the subject, and this has been applied in rather an interesting manner by Dr. Cobb. As a presentation of the elements of the subject it will be found useful by many, but it cannot be regarded as being in the same plane as, for example, Swale Vincent's book. It is, however, to be recommended to the reader who has not time to study the deeper works on the internal secretions.

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*The Method of Enzyme Action.* By JAMES BEATTY, M.A., M.D., D.P.H. Pp. xii. + 143. London: J. & A. Churchill. 1917. Price 5s. net.

WE must be prepared not to consider physical chemistry and physiological chemistry as virtually interchangeable terms. The student of one must be the student of both. A contribution in this sense is the essay, introduced by Professor Starling, which Dr. Beatty presents.

Apart from the hypothesis which the author elaborates, the book contains a commendably clear exposition of some of the more salient

facts of physical chemistry which make very interesting matter for the reader who fights shy of the specialised text-book.

After summarising the distinctive features of colloids and absorption, the properties of enzymes compared with inorganic catalysts, of hydrolysis, oxidation, and reduction, it is submitted that all enzymes, whether oxidising, reducing, or hydrolytic, act in virtue of two capacities—one the general power of attracting H or OH groups in water, and the other the specific power of absorbing a specific substrate. With this, we commend the discussion to the critical reader.

*The Secretion of the Urine.* By ARTHUR R. CUSHNY. Pp. 241. With 35 Diagrams in the Text. London: Longmans, Green & Co. 1917. Price 9s. net.

If the monographs of physiology edited by Professor Starling all attain to the level of this member of the series, their success is assured. In his preface Professor Cushny remarks, "No other organ of the body has suffered so much from poor work as the kidney, and in no other region of physiology does so much base coin pass as legal tender": and close examination of the book shows that his work has been in large measure a cleansing of Augean stables. What then is the outcome of this modern review of an intricate subject? A compromise between the opposing views of Ludwig and of Heidenhain. The urine is filtered through the capsule in a dilute form and concentrated in the tubules, but mere physical principles do not as yet suffice to explain the source of energy in the latter process: it is "vital" in that it depends on the activity of the cell. As concerns the pathology of nephritis the author inclines to the view that a lesion in the glomerulus is the primary change. The book must be read for itself, however: in a short review it is impossible to convey an idea of the wealth of experimental detail discussed. It is a book first of all for the physiologist, but no pathologist or clinician can afford to neglect its main teaching, and in almost every chapter one lights upon new facts and new outlooks.

*Human Physiology: A Text-Book for High Schools and Colleges.* By PERCY GOLDTHWAIT STILES. Pp. 405. Philadelphia and London: W. B. Saunders Co. 1916.

WE have read this little book with great pleasure. The medical student in search of a cram-book may be warned at once to look elsewhere, but the seeker after a sound and sane presentment of the broad principles of physiology could hardly have a better guide. Experimental data, tracings, and descriptions of instruments are omitted, but the author's clear statements and apt analogies will probably be of more service to

the class of reader to whom he means to appeal. There is little in the book to which we can take exception. The reference to inflammatory accumulation of leucocytes, without any note of the leucocytosis in the blood, or the question of antitoxins, may convey rather too simple an idea of the protective functions of the body. The description of the second cardiac sound as a "click" is hardly fortunate. Candidates for life insurance may have to pay for a "click." It is remarkable that a physiologist of Stiles' accomplishments should subscribe to the old error that the epiglottis shuts down on the larynx during swallowing. There is no account of voice production. There is a good index and a sufficient number of anatomical and histological diagrams to make the text intelligible to the denizens of "High Schools and Colleges."

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*Text-Book of Histology.* By H. E. JORDAN and J. S. FERGUSON.  
Pp. xxviii. + 799. New York and London: D. Appleton & Co.  
1916. Price 15s. net.

No student of histology can complain of any lack of text-books. Indeed, his difficulty might well be in making a selection. Most of them are so good, however, that he can hardly go wrong. The distinctive features of the handsome volume before us include a great wealth of illustration, a fairly full description of the tissues and organs, a moderate amount of information about technique, special attention to development, clear type, and a very pleasing get up in limp covers.

There are anatomical diagrams of the respiratory and alimentary tracts which may seem unnecessary, but there are no descriptions of the brain stem and its connections, although the nerve elements are done in detail.

There is a diagram of the cerebral cortex showing the position of the centres which seems out of place in a book on histology, and the arrangement of the motor areas is not in accordance with modern teaching.

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## NEW EDITIONS.

*Diseases of the Throat, Nose, and Ear.* By W. G. PORTER, M.B., B.Sc., F.R.C.S. Second Edition, revised for the Author by P. M'BRIDE, M.D., F.R.C.P., F.R.S.E. Pp. xvi. + 280. With 77 Illustrations. Bristol: John Wright & Sons. 1916. Price 7s. 6d.

ONLY four years have elapsed since the first edition of this work appeared, and, even so, the book was out of print for many months till Dr. M'Bride undertook the work of revision for his friend Dr. Porter, who was absent on active service and has since been killed. The object of the book is to provide the practitioner and senior student with a single volume of moderate size on the throat, nose, and ear. In order to keep the work within a small compass, anatomical descriptions have been omitted. This omission is the only serious fault that can be found with the book. It may be true, as stated by Dr. Porter, that an anatomical text-book is in the hands of nearly everyone, but the question is—Will everyone consult it? Human nature being what it is (uncommonly lazy), one finds that the senior student, with whom the book is very popular, possesses only a slight knowledge of the anatomy of the larynx, nose, and ear. One's real knowledge of anatomy is gained from dissection, and, by the time the "special" regions are reached in the dissection of the head and neck, the part is dried up and uninteresting, and the nose, larynx, and ear are therefore not thoroughly examined.

The work of revision has been well done by Dr. M'Bride; we note excellent additions to the sections on ozæna, Vincent's angina, the functional examination of the ear, syphilis of the labyrinth, and many others. The second part of the work, dealing with the larynx, is particularly good. We might, however, suggest that the description of von Eicken's hypopharyngoscopy—now out of date—might be omitted. The section on the nasal neuroses in Part III. is valuable in that it gives the reader the results of the author's personal experience. In Part IV., dealing with the ear, we suggest that a list of suitable words for testing the patient's hearing might be given. Students seem to become aphasic when asked to apply this simple practical test. The intracranial complications of middle-ear suppuration are described shortly and well.

All through the work one is struck by the thorough knowledge of the literature of the specialty displayed by the author and reviser. The only notable omission which occurs to us is the work of Cheatle



on the structure of the mastoid process and its influence on the course of middle-ear suppuration.

The illustrations are excellent, but too scanty. The section on the functional examination of the ear, for instance, would be rendered clearer by a few diagrams.

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*Clinical Methods: A Guide to the Practical Study of Medicine.* By ROBERT HUTCHISON and HARRY RAINY. Sixth Edition. Pp. 664. With 161 Illustrations. London: Cassell & Co., Ltd. 1916. Price 10s. 6d. net.

THE time is past when "Hutchison and Rainy" calls for a detailed notice. Several generations of students have been brought up on it, and its place amongst clinical guides is now fully established. In recording the appearance of the sixth edition it is only necessary to mention the changes and additions that a further revision has entailed.

The chapter on clinical bacteriology has been largely rewritten by Professor James Ritchie, which sufficiently guarantees its authoritative-ness. Directions are given for taking material for the preparation of bacterial vaccines; and new matter has been added regarding various micro-organisms which have assumed importance in connection with the medicine and surgery of war, *e.g.* the paratyphoid group, and the organisms of tetanus, dysentery, rheumatism, and cerebro-spinal fever. The results of recent work on the methods of examination of the myocardium have been incorporated.

When anatomical structures are mentioned, the B. N. A. terms are given in brackets after the old names. In the next edition doubtless the order will be reversed.

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*Applied Immunology.* By B. A. THOMAS, A.M., M.D., and R. H. IVY, M.D., D.D.S. Second Edition. Pp. xviii. + 364. With 73 Illustrations. Philadelphia and London: J. B. Lippincott Co. 1916. Price 16s. net.

A SECOND edition of this volume appears, only a year after the first, as further evidence, if this were needed, of the rapid development in the application of the phenomena of immunity to the prophylaxis, diagnosis, and treatment of disease.

As was said in regard to the earlier edition, the book still leaves a sense of something which does not satisfy our conception of the complete practical handbook. To state what this is in so many words is not easy, but a too uncritical and optimistic horizon and a slight want of proportion are elements. From the laboratory point of view, tabulated detail of technique, with safeguards, warnings, and fallacies,

deduced and collated from experience, are what the busy worker wants. In this respect the book, for its bulk, does not show a strong feature. The authors, however, as they state, have as their object not so much an accumulation of technical detail as to offer help to the student and practitioner to appreciate the significance of and more competently apply the principles underlying immunology. This being so, we must exhort the reader who takes the subject up on these general principles to remember that in work of this nature the investigator must always be on his guard against deductive conclusions on insufficient basis, against the dream of the general applicability of a special method, and to weigh the varied and disturbing biochemical influences at work *in vivo* as distinct from *in vitro* tests, our circumscribed knowledge of micro-organismal life-histories, and the corrective influence of time on the exaggerated hopes of apparent early successes.

The author's advocacy of the claims of the practical study of immunology in the medical curriculum seems amply vindicated in the demand for a volume which requires a second edition within a year.

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*Practical Bacteriology, Blood Work, and Animal Parasitology.* By E. R. STITT, A.B., Ph.G., M.D. Fourth Edition. Pp. xvii. + 500. With 119 Illustrations. London: H. K. Lewis & Co., Ltd. 1916. Price 9s. net.

A FOURTH edition of this very successful publication—originally produced in the interests of the United States Naval Medical Service—is just to hand. Though the new edition shows an increase of nearly 100 pages to the text, it would be difficult to find a page that could well be dispensed with. Even the fly-leaves are turned to advantage in this *multum in parvo*.

Much new work has been incorporated in this extended volume—more than appears at first sight, as a greater use has been made of small type for subheads or paragraphs dealing with greater detail, so that the size may be kept within the bounds of a pocket manual. For such a book it is ambitiously comprehensive, and, at the same time, eminently practical.

New culture media are described, including Petroff's medium for tubercle bacillus. The chapter on practical methods in immunity moves with the advance in the study of immunology. The questions of acidosis in blood, tests of the efficiency of renal function, anaphylaxis, and a short chapter on the diseases of still undefined etiology have been included in the text. Entamebæ, Leishmania, and the malaria parasites receive a little fuller treatment.

The junior laboratory worker, the student of tropical diseases, and the clinical side-room worker will all find it a useful *vade mecum*. It is well printed on good paper.

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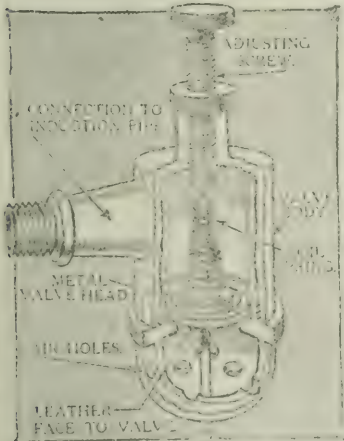
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*Clinical Bacteriology and Haematology for Practitioners.* By W. D'ESTE EMERY, M.D., B.Sc., London. Fifth Edition. Pp. xxxiv. + 310. With 11 Plates and 55 Illustrations. London: H. K. Lewis & Co., Ltd. 1916. Price 9s. net.

THE appearance of a fifth edition is in itself safe evidence that a book has established its place in the bibliography of its subject. The volume before us is no exception. It has been brought up to date in many points and retains the general plan which has made it popular—that of omitting no detail of laboratory technique which might help in the everyday application of bacteriology and blood examination to disease. As such it is to be highly recommended to the practitioner who has not had facilities for special training in these fields. Preparation of tissue sections is described only in so far as some tissues are commonly the seat of pathogenic organisms.

Malaria is dealt with in connection with the bacteriological examination of blood, and apart from the general section on diagnosis.

The chapter on cyto-diagnosis—*i.e.* the interpretation of cellular exudates and effusions—is short but suggestive.

This is a good practical handbook.

*Manual of Psychiatry.* By ROGUES DE FURSAC and A. J. ROSANOFF. Fourth Edition. Pp. xi. + 522. New York: J. Wiley & Sons. London: Chapman & Hall. 1916. Price 10s. 6d.

FROM the fact that this book has reached a fourth edition in twelve years the conclusion may be drawn that it is a sound and useful one. It has indeed attained decided popularity, and is now widely recognised as one of the most serviceable of the smaller treatises on psychiatry. Owing to the war the collaboration of the French author has not been possible, so that Dr. Rosanoff is solely responsible for the new edition. He has made extensive alterations in some of the chapters in order to bring the work completely up to date. Etiology, methods of examination, prognosis, prevention, cerebral syphilis, and traumatic psychoses are subjects which have been almost entirely rewritten. The first part of the book is about a third of the whole, and is concerned with the general symptoms of mental disease and methods of examination. Under the former the disorders of the various mental faculties are entered into in considerable detail. In regard to the examination of patients for these symptoms a very useful warning is given, and by some investigators greatly needed: "Over-refined psychological analyses are to be mistrusted if one is to avoid unwarranted conclusions which would render the diagnosis and prognosis faulty." Unless one keeps this in mind one may not see the wood for the trees. In the description of the methods of examination all the latest tests for the blood and cerebro-spinal fluid are given and the technique stated so

clearly that it can be easily carried out. In the second and larger part of the book an account is given of the various mental diseases. This follows mainly Kraepelin's classification. They are divided into constitutional, syphilitic, traumatic, and miscellaneous. The question of classification is always a difficult one, and none is as yet quite satisfactory because none can be perfectly logical. The main requirement is that no distinctive clinical type is omitted, and that there should be some clinical, pathological, or etiological nexus between the members of the same groups. In a manual for students, which this mainly is, another desideratum is simplicity rather than elaboration, and in this direction also the authors may be said to have hit the happy medium. On the question of treatment the book is not quite so good as in other parts. On the whole, however, it may be strongly commended as a useful and compact manual on a very difficult subject.

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*Essentials of Physiology.* By F. A. BAINBRIDGE, M.A., M.D., D.Sc., and J. ACWORTH MENZIES, M.A., M.D. Second Edition. Pp. viii. + 478. With 173 Illustrations. London: Longmans, Green & Co. 1916. Price 12s. 6d. net.

A SECOND edition of this very practical work has just appeared. It is in series with the *Essentials of Histology* by Schäfer, *Chemical Physiology*, by Halliburton, etc., and as such is one of a group of very succinct and clear text-books. It would be an undeserved depreciation of the book to treat it only as a "crum" work for examination purposes. As a compact book of reference on the more established principles practitioners might go far to find a more readable companion.

The practical application of histology and chemical physiology, being dealt with in the other volumes of the series, is not allowed to take up much space, but the bulk of the graphic records are descriptive of the work of the usual experimental class.

Where current theories differ these are impartially stated. The chapters dealing with muscle, the nervous system, and digestion have been rewritten and elaborated, and new points added throughout.

The tracings and diagrams are very numerous and helpful, and the paper and letterpress are excellent.

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*The Treatment of Tabetic Ataxia.* By Dr. H. S. FRENKEL, Medical Superintendent of the Sanatorium "Freihof" in Heiden, Switzerland. Translated by Dr. FREYBERGER. Second Edition. Pp. 200. London: William Heinemann. 1917. Price 12s. 6d. net.

ALTHOUGH fifteen years have elapsed since the first English edition of this work appeared, the text and the subject-matter are substantially the same, and this is due to a good reason, viz. that the author's first investigations and conclusions have stood the test of time. A

therapeutic appendix has been added, so that the reader finds within the covers of the book a complete list of treatment for this serious malady. Frenkel's book is a brilliant clinical study, wherein is displayed the result of carefully considered investigation along lines both old and new. In order to carry the reader with him the author discusses the causes of the inco-ordination in locomotor ataxia, and presents his own views in a reasonable, lucid, and convincing manner. The importance he attaches to hypotonia of muscles and anaesthesia of the articular surfaces of joints is not exaggerated, for in these two phenomena we find an explanation of much that is otherwise difficult to understand. Following on the description of the factors at work in causing the inco-ordination comes the author's system of exercises devised to arrest the gradual loss of co-ordination, whereby a patient may longer equilibrate and preserve power of locomotion. Not to have knowledge of Frenkel's ideas for treatment is tantamount to ignorance of much that is interesting and suggestive and clinically important in locomotor ataxia. The translator has done his work well. His translation, he tells us, is a free one, and one cannot but notice that the work reads like an original.

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*Applied Anatomy.* By GWILYM G. DAVIS. Fourth Edition. Pp. 630. With 631 Illustrations. Philadelphia and London: J. B. Lippincott Co. 1916. Price 24s. net.

IN this book the author presents his subject in a most acceptable way. In the consideration of a region the skeleton and muscles are first described, then the surface anatomy; this is followed by a brief discussion of the commoner pathological conditions occurring in the part, with such allusion to the vessels and nerves as may be necessary. The more important operations are considered in relation to the anatomy of the region. The book is profusely illustrated by beautiful drawings, which are the work of Mr. Erwin F. Faber, and which are most appropriate to the understanding of the various regions from the surgical standpoint. They render the study of the anatomical facts easy and pleasant.

In his object of showing the relation of the anatomy of the individual regions to their function and pathology the author succeeds well. As a guide to the operations the anatomical descriptions are too brief in many cases. Apart from this defect there is little to criticise. The terminology is a somewhat illogical mixture of B. N. A. and the "old," which is understood readily enough. The book is printed on excellent paper, which has rendered the reproduction of the drawings very successful. The advanced student and the teacher of applied anatomy in particular will find this work a very pleasant aid to their subject.

*Surgical Anatomy.* By JOHN A. C. MACEWEN. Second Edition. Pp. 535. With 76 Illustrations. London: Baillière, Tindall & Cox. 1916. Price 10s. 6d. net.

THIS book has been written as a manual of surgical anatomy for students who are working for their final examination, and it fulfils its purpose very well. It gives a clear and concise account of the essential anatomy of the various regions, with a short reference to the pathological conditions which are found in each part. It is rather astonishing to find that no reference whatever is made to the B. N. A. terminology, and this fact is bound to militate against any widespread popularity of the book. The illustrations are distinctly diagrammatic throughout; but this may be an advantage for undergraduate students.

To those who retain the old terminology this work may be recommended as a sound and satisfactory text-book.

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*A Treatise on Materia Medica and Therapeutics.* By RAKHALDAS GHOSH, Lecturer on Materia Medica, Calcutta Medical School. New Edition. Pp. 698. Calcutta: Hilton & Co. 1916. Price 7s. 6d. net.

WE had recently the privilege of reviewing the earlier edition of this work, which is one of considerable merit and usefulness. The issue of a new pharmacopœia has occasioned the appearance of the present edition, and the author has taken the opportunity of adopting a therapeutic instead of an alphabetical classification. In some ways this is less handy for the student, for whose wants this manual is designed. The subject-matter is always clearly stated, the salient points are defined by the use of heavy type, and few errors have been detected. On p. 356, however, the composition of acid carbolie liquefactum is incorrectly stated. We have again pleasure in recommending this volume for the use of junior students.

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## NOTES ON BOOKS.

*The Panel Doctor, His Duties and Perplexities*, by Dr. T. M. Tibbetts (Cornish Bros., Ltd., Birmingham, 1s. 6d. net), is a useful guide to the working of the National Insurance Act.

Dr. N. Corbet Fletcher has added to the series of elementary brochures he has already published *Hints for Hospital Orderlies* (Bale, Sons & Danielsson, price 6d.).

The third volume of *International Clinics* for 1916 (Lippincott) contains a number of articles on varied subjects and of unequal interest. With one exception they are from the pens of American writers. The articles deal with such subjects as the treatment of obesity, the medical uses of high-frequency currents, the X-rays in the diagnosis of pulmonary phthisis, and thoracic adenitis, herpes zoster, and a number of surgical subjects.

Dr. John E. Lind contributes a most interesting and instructive paper on *The Mental Examination of Negroes*, in which he shows the different psychology of the negro and the Caucasian, and the necessity for a different standard in investigating the mental conditions of the two races.

The new edition—the third—of Mr. Arthur Cooper's *Sexual Disabilities of Man* (H. K. Lewis, 1916, price 6s. net) does not call for detailed notice. We expressed a favourable opinion of the previous edition, and in some respects the present one is improved, notably by the addition of a section on the subject of prevention.

Dr. Fielding Garrison's biographical notice of *Armand Trousseau—A Master Clinician* is most readable.

REPORTS, TRANSACTIONS, ETC. — *Transactions of the American Pediatric Society*, Vol. XXVIII., 1916, edited by L. E. la F  tra, M.D., pp. 338. This copy of the *Transactions* contains 35 papers which cover a wide variety of subjects.

Among the more interesting are a suggestion regarding the treatment of chorea put forward by Jacobi, and papers on "The Dangers to Hospital Efficiency from Diphtheria Carriers," by Adams and Leech, and on "Schick Reaction in Infants," by Shaw and Foulard.

Jacobi's statement, founded on work done by Dr. A. L. Goodman at the German Hospital in New York, and about to be published by him, is to the effect that the treatment consists in removing 30 or 40 c.c. of blood from the child and injecting half the serum from this blood into the child.

"The paper Dr. Goodman will publish will prove to you that the patients all improve somewhat within twenty-four hours, and still more in forty-eight. They are actually cured within a few days or a week."

## BOOKS RECEIVED.

- ARTHUR, D., and JOHN MUIR. A Manual of Practical X-Ray Work . . . (Wm. Heinemann) 12s. 6d.
- BEATTY, JAMES. The Method of Enzymic Action . . . (J. & A. Churchill) 5s.
- BREKIDLEY, COMINS. A Handbook of Midwifery. Fourth Edition . . . (Cassell & Co., Ltd.) 6s.
- BLANDE-SUTTON, SIR J. Tumours, Innocent and Malignant. Sixth Edition . . . (Cassell & Co., Ltd.) 21s.
- BLOMFIELD, J. Anaesthetics. Fourth Edition . . . (Bailliere, Tindall & Cox) 4s.
- BRISTON, W. R. Treatment of Joint and Muscle Injuries . . . (Frowde, Hodder & Stoughton) 6s.
- BULKLEY, L. D. Cancer: Its Cause and Treatment . . . (P. B. Hoeber) dol. 1.50
- COBBETT, L. The Causes of Tuberculosis . . . (Cambridge University Press) 21s.
- CRAIG, M. Psychological Medicine. Third Edition . . . (J. & A. Churchill) 15s.
- CUMMINGS, B. E. The Bed-Bug . . . (British Museum Economic Series) 1d.
- CUSHNA, A. R. The Secretion of the Urine . . . (Longmans, Green & Co.) 4s.
- DAWSON, E. R. The Causation of Sex in Man. Second Edition . . . (H. K. Lewis & Co) 7s. 6d.
- DAWSON, P. M. Elements of Anatomy and Physiology for Nurses. (Macmillan & Co., Ltd.) 7s. 6d.
- DOYEN, E., and H. SPENCER-BROWNE. Surgical Therapeutics and Operative Technique. Vol. I. . . . (Bailliere, Tindall & Cox) 25s.
- EDEN, T. W., and C. LOCKYER. The New System of Gynecology. Vols. I., II., and III. (Macmillan & Co.) 46. 6s.
- EDER, M. D. War Shock: The Psycho-Neuroses in War . . . (Wm. Heinemann) 5s.
- EDWARDS, F. W. Mosquitoes and their Relation to Disease . . . (British Museum Economic Series, No. 4) 1d.
- EPISCOPAL Hospital, Philadelphia. Medical and Surgical Reports, 1915. Vol. III. (W. J. Dornan) —
- FOWLER, SIR J. K. The Medical and Nursing Services of the Imperial Army . . . (Macmillan & Co.) 3d.
- FOX, R. F. Physical Remedies for Disabled Soldiers . . . (Bailliere, Tindall & Cox) 7s. 6d.
- FRENCH, HERBERT. An Index of Differential Diagnosis of Main Symptoms. Second Edition . . . (J. Wright & Sons, Ltd.) 42s.
- GENERAL Education Board. Report of Secretary, 1915-1916 . . . (New York) —
- GLEY, E., and M. FISHBERG. The Internal Secretions . . . (P. B. Hoeber) dols. 2
- GREEN, C. E. The Cancer Problem. New Edition . . . (W. Green & Son, Ltd.) —
- HINSHELWOOD, J. Congenital Word-Blindness . . . (H. K. Lewis & Co.) 4s.
- HIRST, S. Species of Arachnida and Myriopoda Injurious to Man . . . (British Museum Economic Series) 6d.
- HOUSTON, A. C. Rivers as Sources of Water Supply . . . (Bale, Sons & Danielson, Ltd.) 5s.
- INDEX-Catalogue of the Library of the Surgeon-General's Office, U. S. Army. Second Series. Vol. XXI. Waterworth-Zysman . . . —
- JONES, A. B., and L. J. LLEWELLYN. Malingering . . . (Wm. Heinemann) 25s.
- JONES, ROBERT. Notes on Military Orthopedics . . . (Cassell & Co., Ltd.) 2s. 6d.
- KIDD, FRANK. Common Diseases of the Male Urethra . . . (Longmans, Green & Co.) 5s.
- KINGZETT, C. T. Chemistry for Beginners . . . (Bailliere, Tindall & Cox) 2s. 6d.
- MALLOCH, A. Finch and Baines: A Seventeenth Century Friendship . . . (Cambridge University Press) 10s. 6d.
- PORTER, C. Elements of Hygiene and Public Health . . . (Frowde, Hodder & Stoughton) 12s. 6d.
- POTTINGER, F. M. Clinical Tuberculosis. Vols. I. and II. . . . (H. Kimpton) £3. 3s.
- REPORT on the Health of the Army for the Year 1913. Vol. LV. 1917 . . . (H.M. Stationery Office) 2s. 6d.
- REPORT on the Physical Welfare of Mothers and Children—England and Wales. Vols. I. and II. . . . (Carnegie United Kingdom Trust) —
- REPORT of St. Dunstan's Hostel for Blinded Soldiers and Sailors, for the Year ended 31st March 1917 . . . —
- RIVIERE, CLIVE. The Pneumothorax Treatment of Pulmonary Tuberculosis . . . (Frowde, Hodder & Stoughton) 6s.
- SURGICAL Clinics of Chicago. Vol. I., No. 1. . . . (W. B. Saunders) per annum £2. 2s.
- THE Medical Annual, 1917 . . . (J. Wright & Sons, Ltd.) 10s.
- THE Veterinary Review. Vol. I., No. 1. February 1917 . . . (W. Green & Son, Ltd.) per vol. 10s. 6d.
- TRANSACTIONS of the American Gynecological Society, 1916. Vol. XLI. . . . (W. J. Dornan) —
- TRANSACTIONS of the American Pediatric Society, 1916. Vol. XXVIII. . . . —
- TRANSACTIONS of the American Surgical Association, 1916. Vol. XXXIV. . . . (W. J. Dornan) —
- WALFORD, W. G. Dangers in Neck-Wear . . . (H. K. Lewis & Co.) 4s. 6d.
- WHITEFORD, C. HAMILTON. Acute Appendicitis . . . (Harrison & Sons) 4s.

# EDINBURGH MEDICAL JOURNAL.

## EDITORIAL NOTES.

### The Continuity of Listerism.

IN our review columns we notice a recent contribution to surgical therapeutics made by Dr. A. Carrel and Dr. G. Dehelly, in which the

familiar "Carrel's Method" of wound treatment is fully expounded.

It is to be feared that the tone of Dr. Carrel's introductory chapter will raise misgivings in the mind of the reader who has been nurtured in Listerism, and has remained faithful to the doctrines he imbibed with his surgical-mother's milk. To read this chapter one would suppose that during the first two years of the war the teaching of Lister had been universally forgotten, that the antiseptic idea had been totally eclipsed, and that it had only come to light again with the advent of "chemiotherapy" at Compiègne.

This impression arises from meeting such passages as these: "Lister, undoubtedly, by the aid of carbolic acid, succeeded in disinfecting compound fractures at a time when such an injury was of the gravest import. Nevertheless, modern surgeons disregard these facts. Not only have they despised the road opened up by Lister, but they even question the possibility of applying the principle of antiseptics to war wounds." "The throwing over of Lister's ideas came about . . ." (p. 3). Again, ". . . surgeons raised to the position of dogma, the teaching that antiseptics had no real efficacy" (p. 4). "The fundamental observations of Lister were forgotten completely" (p. 5).

It is true that the very success of Listerism had in the years before the war so modified surgical technique that in civil practice the use of powerful bactericidal agents had to a large extent been rendered unnecessary. The gross infections of the wounds of war came as a shock and surprise to those who had for long been unfamiliar with the more severe forms of sepsis, and it took some time for them to adjust their methods to the new conditions.

But the ideas of Lister had neither been thrown over by his disciples, nor overthrown by "modern surgeons." They were as vital when war broke out as ever they were, but the war brought with it

new and unforeseen problems, and the methods, not the ideas, of Lister, had to be adapted to meet them. Those who experienced in France the first shock of sepsis during the winter of 1914-15 will recall the futile efforts that were made with the agents then in common use to combat the severe infections that were rampant, and how they had to fall back upon the antiseptic solutions that had gradually been discarded as needlessly strong. So far from Listerian teaching being thrown over, the popular cry was "Back to Lister."

It is possible that Dr. Carrel may have been misled as to the trend of surgical opinion in Britain by the attention that was paid for a time to the proposals of Sir Almroth Wright and his followers, but it is certainly an exaggeration to say that the doctrine of treatment by physiological methods by means of phylacogogic agents "was accepted by the majority of surgeons." Those who were impressed by the high-sounding periods and the awe-inspiring nomenclature of the "principal adversary of antiseptis," and by the paeans that were sounded by his docile followers, were quickly disillusioned when they removed the dressings from a patient who had been treated by his method in France and transported to this country with a "salt-pack" in the depths of a wound.

The fact is, that those who had a real grasp of Listerian principles remained uninfluenced by the laboratory results of Wright—witness the spirited attack of Sir Watson Cheyne which was referred to in these columns in February 1916, and which we venture to think voiced the general opinion of British surgeons.

On another point the introductory chapter of this book leaves a wrong impression. The authors seem to indicate that with the assumed breaking down of the Listerian system and the failure of the physiological method, surgeons threw up their hands in despair and gave up the attempt to combat the sepsis of war wounds. It is necessary to remind them they were not alone "at the end of December 1914" in seeking "to discover the best means of treating wound infections." The whole surgical and pathological world was engaged in the same quest. Nor were they singular when they "adopted the method of chemotherapy." All who held by the tenets of Lister did the same. The authors, writing in September 1916, are not justified in saying "It would seem, however, that hitherto, practically no really systematic research had been carried out with the object of discovering the procedure needful to bring about this improvement in treatment of wounded." They may have been so engrossed in their work as to have overlooked the fact that their own was not the only research carried out by the "co-ordinated efforts of chemists, pathologists, bacteriologists, trained in scientific technique." In the Edinburgh school, to go no further afield, such an investigation was conducted, and the results obtained by Professor Lorrain Smith and his co-workers



were published in the middle of 1915.\* It is far from being the case that "no results of value were obtained" (p. 3): the preparation of hypochlorous acid, devised by these workers, became widely employed, and under the name of "Eusol" is now one of the most efficient and generally used antiseptics. After searching clinical tests, both in military and in civil practice, its value has been established, as numerous papers published in this *Journal*,† as well as in our contemporaries at home and abroad, abundantly testify.

In writing thus, we in no way desire to depreciate the value of the work of Carrel and Dakin. It is a sound and abiding contribution to surgical therapeutics. The method of wound treatment they have devised is an eminently efficient means of applying certain surgical principles, which the authors hold in common with all workers in the same field. We would, however, enter a  *caveat*  against the suggestion, which keeps repeating itself throughout their writings, that it is a revolutionary rather than an evolutionary step, and that the "method of chemotherapy" is a breakaway in the development of the antiseptic idea. The Edinburgh school has a hereditary interest in Listerism, and we confess to a certain satisfaction that she can legitimately assert a claim to share in the credit which attaches to its latest triumphs.

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WE are glad to give prominence to the special appeal that is being made on behalf of the War Emergency Fund of the Royal Medical

War Emergency Fund.  
Benevolent Fund.

"This fund was instituted last year to afford assistance to members of our profession who, in consequence of having joined the Army Medical Service, find themselves in temporary difficulties.

"Many medical men, when called up, had to leave on very short notice, without time to make adequate provision for the continuance and maintenance of their practices during their absence. As a result they have had to face a severe fall in income, even when supplemented by Army pay; while many expenses, such as rent, insurance, taxes, family maintenance, and education could not be reduced. Although in a year or two after their return it may be hoped those affected will recover their position, still, in the interval, help is, and will be, necessary, and it is to meet these needs that the War Emergency Fund was established.

"To be effective, the grants must be made on a liberal scale, and the fund from which they are to be drawn must be a large one. The sum obtained last year was about £4000. This is quite inadequate, as at least £25,000 will be required, if even a small proportion of those

\* *Brit. Med. Journ.*, 24th July 1915.

† This *Journal*, February and March 1916.

requiring assistance is to be helped. From the wealthier members of the medical profession it is hoped substantial sums will be received, but everyone should feel it a duty which he owes to his less prosperous colleagues to give the most liberal donation he can afford.

"At the same time the appeal is not, and ought not to be, restricted to the medical profession. The public, too, may be rightly called upon to bear its share, and to show, by liberal contributions, its appreciation of the special services so freely rendered by the medical profession to the country.

"The War Emergency Fund is a special department of the Royal Medical Benevolent Fund. It is kept separate and distinct from the ordinary operations of the general fund, and is under the management of a committee specially appointed for the purpose.

"Communications should be addressed to the Honorary Secretary, War Emergency Fund, 11 Chandos Street, Cavendish Square, W. 1, to whom cheques should be made payable."

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### CASUALTIES.

KILLED in action, Captain DOUGLAS REID KING, M.C., R.A.M.C., in the beginning of June.

Captain King was educated at Glasgow University, where he graduated M.B. and Ch.B. in 1914. He was mentioned in despatches in 1915, and received the Military Cross on 3rd June 1917.

DIED of wounds, Captain WILLIAM ALEXANDER SMITH, R.A.M.C., as a result of wounds received during the recent fighting.

Captain Smith was educated at Aberdeen University, where he graduated M.B. and Ch.B. in 1904. He was in practice at Wesham, Lancashire, till he took a temporary commission in the R.A.M.C.

LOST at sea, Lieutenant RONALD STEWART, R.A.M.C.; reported in the *Scotsman* of 21st June.

Lieutenant Stewart was educated at Glasgow University, where he graduated M.B. and Ch.B. in 1914. After serving in the Western Infirmary, Glasgow, and the Belvedere Fever Hospital, Glasgow, he took a temporary commission in the R.A.M.C., and had served for some time at No. 4 General Hospital, Stobhill.

KILLED in action, Captain CLIVE ALAN WHITTINGHAM, R.A.M.C.; reported in the casualty list published on 21st June.

Captain Whittingham was educated at Glasgow University, where he graduated M.B. and Ch.B., with commendation, in 1910. He entered the Special Reserve of the R.A.M.C. on 31st January 1914, and was attached to the Royal Fusiliers when killed.

KILLED in action, Captain JOHN EARNSCLEUGH BRYDON, R.A.M.C. (T.F.), on 27th June, aged 33.

Captain Brydon was educated at Edinburgh University, where he graduated M.B. and Ch.B. in 1908. He was in practice at Chagford, Devonshire, before taking a commission on 3rd January 1915. He was attached to the Yorkshire Regiment when killed.

ACCIDENTALLY drowned, Lieutenant FRANK WHINCUP, R.A.M.C., in France, on 2nd July, aged 43.

Lieutenant Whincup was educated at St. Bartholomew's Hospital, and took the diplomas of M.R.C.S. and L.R.C.P.(Lond.) in 1897, and that of F.R.C.S.(Edin.) in 1902. He was in practice in Shrewsbury, and had only recently taken a temporary commission in the R.A.M.C.

### MEDICAL STUDENT.

KILLED in action on 6th March 1917, Second-Lieutenant GEORGE MILNE UNDERWOOD, Royal Flying Corps, aged 19. He had entered Edinburgh University as a medical student.

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**Graduation Ceremonial.** THE Summer Graduation Ceremonial was held in the McEwan Hall on Wednesday, 11th July 1917, when the following degrees were conferred by the Vice-Chancellor:—

*The Degree of Doctor of Medicine*—Frederick Orlando Clarke (Capt., R.A.M.C., Ireland, M.B., Ch.B., 1911, "Poisoning by Trinitrotoluene T.N.T." (*in absentia*)). William James Crow (Lieut., R.A.M.C., Scotland, M.B., Ch.B., 1901, "Malaria. An Analysis of One Hundred Cases, with Special Reference to Malarial Dysentery" (*in absentia*)). Frederick Bernardus Dreyer, South Africa, M.B., Ch.B., 1912, "The Etiology of Ophthalmia Neonatorum and Some Observations on its Treatment" (*in absentia*)). Philip Whiteside MacLagan (Capt., R.A.M.C.), Scotland, M.B., Ch.B., 1910, "Cerebro-Spinal Fever" (*Gold Medal*). John Gregory Owen Moses (Capt., I.M.S.), India, M.B., Ch.B., 1912, "Studies in the Life-Cycle of Human Amoebiasis: From its Protozoological, Morbid, and Clinical Aspects" (*in absentia*)).

*The Degrees of Bachelor of Medicine and Bachelor of Surgery*—George Grant Allan, Scotland (late Lieut., R.S.); John Gibson Allan (B.Sc.), Scotland (with 2nd class Hons.); Lindsay Gordon Allan, Australia (late Surg. Prob., R.N.V.R.); Robert Andrew, Scotland (late 2nd Lieut., Black Watch); John Sutherland Bow, Scotland (with 1st class Hons.); Sarah Boyd, Ireland; William Welch Brown, Scotland (late Lieut., R.F.A.); William David Brunton, Scotland; John Crawford Burns, Scotland; Walter Edmund Canekeratne, Ceylon; Pa Than Chain (B.A., Cal.), Burma; Fakir Chand, India; Pares Chandra Datta, India; Thomas Smith Duncan, Scotland; Harold Balfour Dykes, Scotland (late Lieut., K.O.S.B.); Perry Bowles Eaton (B.A., Arcadia), Canada;

William Everett, Scotland (late Sergt., R.A.M.C.); Norman Patrick Robert Galloway, Scotland; Ajah Singh Garewal, India; James Balfour Kirk, Scotland (late Lieut., R.F.A.); Joseph Laurie Lamont, (B.A., Man.), Canada; David McEachran, Scotland (Surg.-Prob., R.N.V.R.); Annie Mackay, Canada; William Donald Mackinnon, Scotland; David William McLean, Scotland; Robert Mailer, Scotland (with 1st class Hons.); Alister Roderick Matheson, Scotland (Surg.-Prob., R.N.V.R.); Robert Alexander Nathaniel, Trinidad; John MacRae Sandilands Nichol, Scotland (Surg.-Prob., R.N.V.R.); Robert Douglas Osler, South Africa; Albertus van der Poel (B.A., Cape, South Africa (with 2nd class Hons.); Frederick Wilhelm Poole, Scotland; Charles Barrington Balfour Reid, Scotland (late Corporal, R.E.); Horatio Borrowman Renton, England; Sidney Solomon Rosebery, Australia; Andrew Oliver Ross, Scotland (Surg.-Prob., R.N.V.R.); Joseph Hamilton Mundell Sandison, Scotland (Capt., R.S.); Joseph Schneider, South Africa; John McIl Dowie Hope Smellie, Scotland; George Louis Malcolm Smith, Scotland; James Ord Pender Smith, Scotland; Janet Smith, Scotland; John Hope Robertson Smith, Scotland; Stuart Laurie Smith, Scotland; Alan Strachan, Scotland; Ying Kwan To (M.A.), China; James Munro Tyrrell, Scotland; Lindsay Walker (M.A.), Scotland; William Andrew Weatherhead, Scotland; John Duncan White, Scotland; Jacob Wolfson, South Africa (with 2nd class Hons.); Alexander Taylor Woodward, England (Surg.-Prob., R.N.V.R.).

The following awards of Fellowships, Scholarships, Prizes, etc., were made in the Faculty of Medicine:—

*Thesis Gold Medallist*—Philip Whiteside MacLagan, M.D. (Capt., R.A.M.C.). *The Ettles Scholarship*—Robert Mailer, M.B., Ch.B. *The Beuany Prize in Anatomy and Surgery*—Robert Mailer, M.B., Ch.B. *The Monat Scholarship in the Practice of Physic*—Lindsay Gordon Allan, M.B., Ch.B. *The Count Doyle Prize*—James Ernest Hurworth, M.B., Ch.B. (Capt., R.A.M.C.). *The James Scott Scholarship in Midwifery*—Robert Mailer, M.B., Ch.B. *Scottish Association for Medical Education of Women Prize*—Susan Annie Robertson, M.B., Ch.B. *The Dorothy Gilfillan Memorial Prize*—Susan Annie Robertson, M.B., Ch.B. *The Cunningham Memorial Medal and Prize in Anatomy*—Arthur James Cochrane Hamilton. *The Whiteside Bruce Bursary*—William Mackenzie Robb.

#### Royal College of Surgeons of Edinburgh.

At a meeting of the College, held on 17th July, the following gentlemen, having passed the requisite examinations, were admitted Fellows:—Thomas Ewing, M.B., Ch.M. (Sydney Univ.); William Lang Hodge, L.R.C.S.E. (Triple); John MacLean, M.B. (Toronto Univ.), M.R.C.P.&S., Saskatchewan; William Wood Shorten, L.R.C.S.E. (Triple); Horace Powell Winsbury White, M.B., Ch.B. (Edinburgh Univ.); Frederick Joseph Woo, M.B., Ch.B. (Edinburgh Univ.).

#### Triple Qualification Passes.

At the recent examinations of the Board of the Royal College of Physicians of Edinburgh, Royal College of Surgeons of Edinburgh, and Royal Faculty of Physicians and Surgeons of Glasgow, the following candidates passed the *First*



*Examination*:—Alexandra M. Limont, James MacGlashan, A. C. F. Burrow, A. G. Thom, J. L. R. Ross, D. M. O'Flaherty, and Catherine Millar.

The following candidate passed the *Second Examination*:—John Murray.

The following candidates passed the *Third Examination*:—R. B. Forgan, T. R. O'Keeffe, Donald MacLeod, J. W. Rabkin, and R. G. Bell.

The following candidates, having passed the *Final Examination*, were admitted L.R.C.P.E., L.R.C.S.E., L.R.F.P.&S.G.:—John Forbes Campbell, Kincardineshire; James Henry Brown, Edinburgh; Frank Moffat Haddane Sanderson, Portobello; William Ulic Desmond Longford, London; Hugh Emile Colman Collins, Nottingham; Donald McGregor Stewart, Glasgow; Mung Sun Loh, Singapore; Allan Gordon Bee, North Wales; Frank Jones, Seacale, Cumberland; Eliza Jean Stuart, India; Daniel Colin M'Nair, Madras; and Clarence James Middleton, Australia.

At the recent Dental Examinations the following candidates passed the *First Dental Examination*:—Daniel van der Merwe du Toit and Daniel Andries Marchand. The following candidates passed the *Final Examination* and were granted the diploma L.D.S., R.C.S.(Edin.):—William Brownlee Watson, Edinburgh; William Kerr, Edinburgh; Cayetano Bethencourt, Las Palmas, Canary Islands; and Andrew Francis Briglmen, Edinburgh.

THE NEED OF THE FUTURE: EFFICIENCY BASED  
ON MORAL RESPONSIBILITY.

PROMOTER'S ADDRESS AT GRADUATION CEREMONIAL,  
11TH JULY 1917.

By WILLIAM RUSSELL, M.D., P.R.C.P.(Edin.), Professor of  
Clinical Medicine.

FELLOW-GRADUATES,—In the name of the *Senatus Academicus* I congratulate you on the completion of this important stage in your life's work, and on the fact that the industry and struggling of your undergraduate years have been to-day officially acknowledged by the University and the stamp of success conferred upon you.

While you are justly entitled to the congratulations of your teachers and of your friends, I am sure you all realise that the attainment of to-day's goal only opens up to you a wider and a richer outlook, and a future which, however speculative it may appear to be, is fraught with possibilities worthy of attainment, and therefore of continued and sustained effort.

To those of you whose names are to-day added to the profession which I represent, and whose names are now entitled to be placed on the Medical Register of Great Britain, I would venture to say, even in this hour of success, that you have entered a profession in which there is no time-limit but the end of life to your being *students of medicine*. The great aim and purpose of your undergraduate days has been, not really to pass examinations, however important as a test these may be, but to fit you to become true students—true observers of the reactions and contests of the human body against injurious domestic influences as well as against obnoxious alien forces. To most of you this is your life-work, and, if so, it is your duty to that section of mankind with whom you may be brought into contact.

You will, of course, have to rearrange and to correct much that perhaps you think you have learnt. You will find that formulæ on which you learnt will often leave you in doubt and anxiety—that you must, in fact, become observers for yourselves; that you can no longer relegate decisions to the *Chief* under whom you are working; that you yourselves will have to decide, and the accuracy of your decisions depends in the first place upon the accuracy of your individual and unassisted observations.

Looking back to my own student days I have often envied you the advantages of having been born into a time when, instead of much obscurity and empiricism, there is lucidity and reason. Doubtless you have not had the unspeakable satisfaction of living through and of assimilating more or less as they arose the developments of chemistry in the domain of biology, nor of the advance in physiology in other departments, nor of pathology, nor of diagnostic medicine, nor of operative surgery. To help you to realise what those developments mean, within recent decades, I may tell you that as a junior student I had the good fortune to hear one lecture from Professor Hughes Bennett. His theme that day was histogenetic and histolytic processes, and he discoursed eloquently upon them as the fundamental facts of biology, and vigorously controverted the teaching of Virchow as enunciated in his *Cellular Pathology*. The doctrine that all cells come from pre-existing cells is now so definitely established that none of you have, I presume, ever heard it seriously questioned. It is on that doctrine that advance has been possible in bacteriology and all that has sprung from it. I would wish you to realise that you have studied and been taught medicine in a time when the fabric of the curriculum is on firm and secure supports, although an unsound stone here and there may have to be removed and its place taken by a sound one. Knowledge is not only accurate, but can be so stated as to be acceptable to the most reasoning and critical minds amongst you. You will not question the proposition that, in view of the great advances in those various departments, you have probably had to acquire much knowledge, that some of that burden you have already lost. Notwithstanding this loss of detail you have doubtless retained sufficient to enable you to take up the problems of metabolism and of pathological processes with intelligent interest, and these problems will be ever recurring in your daily work and will demand the exercise of your highest faculties. In all departments the aim of your teaching has been not merely to stuff you with book knowledge, but to teach you to see with your own eyes, to do things with your own hands, and to apply your own individual judgment. In your later work you have been taught to use your eyes, hands, and ears in the examination of human beings. You could not have acquired the degree of skill, which it is assumed you have acquired, by prelections, however elegantly constructed, or eloquently delivered in clinical theatres, any more than a skilled pianist could make you masters of that instrument by performing in your presence

and discoursing to you on the laws of harmony. As you know, you have had to do, and to repeat doing, those things for yourselves. And why? That you may be able so to examine your patients that you may state with reasonable confidence that certain phenomena are present; they may be the phenomena manifested by health or the phenomena presented by disease.

If you can do this, the aim of your education up to this point has succeeded; if you cannot, then your education as medical men and women has not succeeded, no matter how full your heads may be of lecture-room instruction.

But assuming that you have acquired this essential and fundamental technical skill, may I venture to point out to you that you have now patiently and carefully to cultivate the faculty of sound judgment. This faculty it is which leads you to truth; and truth in medicine means accurate and full observations, and the reasoned judgment based thereon, known as correct diagnosis. "With all thy getting get understanding" is the expression of this truth in the Book of Wisdom. And may I remind you further that although a poet laureate wrote that "knowledge comes, but wisdom lingers," it is not the expression of a poetical illusion, but of a hard fact. Understanding and wisdom are but other names for truth. And I pray you to treat even the pursuit of truth with reverence; she has to be sought for, and watched for, wooed, not concussed, nor captured by violence, although it is said that some violent persons take even the Kingdom of Heaven by force.

These are, broadly, the outlines of your present position, and I venture to suggest that they are applicable to the graduates in all the Faculties. To all of you, the youngest children of the University, as our late Principal would delight to designate you, has been given the experience of studying and graduating during years unique in the world's history—when nations have become military camps—when whole peoples are ranged either on the side of aggression, tyranny, and brutality, or of freedom and Christian morality. Some of you will at once have to take your places in armed camps, others of you will be called upon to do the work of men who are called to those camps. Those immediate duties you will cheerfully fulfil. But may I suggest to you that you individually can best serve your country, can best serve the land you come from, and the great cause for which the world is suffering and fighting, by cultivating personal efficiency, and by endeavouring to do well whatever falls to your hands to do. This efficiency



in daily and hourly duty is the training and the discipline which will fit you for higher things. Opportunity comes to the man who uses well the material about his hands, and I could hardly give you a better example of what I mean than by pointing to the thesis to which the University has to-day awarded a gold medal.

I would, however, ask you to remember that men and women's minds are turning anxiously to the contemplation of after-war conditions. You, as educated citizens, enfranchised men and women, cannot put those questions away from you. Prevision is given to few, but we may all venture to prophesy that human nature will not be radically altered. We can hardly hope to be rid of the false prophet, of the facile-tongued charlatan—not unknown even in medicine—of the narrow specialist and the faddist who never learns that truth is a bigger thing than the gnat which fills his eye; yet, in spite of that, some pre-war points of view will have disappeared, while others will be established; there will be re-groupings and re-arrangements—a new earnestness, less selfishness, and a widened sense of Imperial Service. The need of our great Empire, of our great Commonwealth, will ever be, perhaps even to a greater degree in the future than in the past, individual efficiency springing from and guided by a sense of moral responsibility; towards the meeting of that need we—you—can individually contribute, whatever your future sphere of activity may be.

The University has set its seal upon you, and it asks you to remember at all times that it carries with it moral responsibilities as well as material advantages. If the former are freely and fully met you may be assured that all other things good for you will be added thereunto.

In that spirit your University sends you forth from her care, wishing you Godspeed, and in the hope that good success may follow you in the strenuous years of high service to which you are this day called.

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## ON THE ETIOLOGICAL CLASSIFICATION OF DEFORMITIES OF THE FEMALE PELVIS: WITH REMARKS.

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ETIOLOGICAL classification is the highest form of arrangement in considering a question scientifically, as it indicates that the specialist has attained a deeper knowledge of his subject. The main branches of medical science do not, however, lend themselves to it—for instance, medicine and surgery, and obstetrics as a whole. In the first two an anatomical classification must, in the main, be employed, while in the last, one follows the description of an adult female's life in its sexual aspects, normal and abnormal. In gynaecology, pathological systems have been attempted, but our knowledge is not yet sufficiently advanced for these to be quite or even approximately successful, and an anatomical classification must therefore for long be followed in this branch of surgery. Anatomical classifications are convenient and easy in the branches of medicine and surgery just mentioned, and are like the ordinary name catalogue of our libraries, while the etiological arrangement is akin to the subject catalogue. Each has its advantages and defects to the student. This, however, should not deter us from an etiological classification in any of the various groups of diseases in medicine and surgery, and the important one in midwifery, known as pelvic deformities, lends itself specially well to such a trial.

*Preliminaries.*—A primary question that falls to be considered here is, "When are we to consider a female pelvis deformed?" It is not enough to say that the female bony pelvis is deformed when labour is obstructed, as this cause may lie with the foetus or uterine and pelvic elastic tissues. We must therefore define bony hindrance from the capacity of the true pelvis relative to the foetal head. Here we must note that the deformity may be at the brim, in the cavity, or at the outlet. Of these the brim and outlet are the most important.

The *brim* is the most frequent site of deformity, and of all the diameters there, the conjugate is most frequently at fault. We may say on this point that a brim conjugate, clinically ascertained, below 9·7 to 10 cm. is a deformed one, but here some qualification is necessary. A  $3\frac{3}{4}$  in. conjugate (9·7 cm.) would

permit of the passage of a living child by version or forceps in a pure flat or flat rickety, but there would be more difficulty with forceps in a justo-minor pelvis than in the former. One might even deliver in a  $3\frac{1}{2}$  in. rickety flat (8.75 cm.) and get a living child in a multipara, but fail in a justo-minor. It has also to be noted that an anatomical conjugate of the same diameter may be present in a malacosteon pelvis where Cesarean section would be necessary, owing to the want of brim transverse enlargement. Then in the *cavity* the justo-minor is contracted below the brim in like proportion to the brim narrowing, while in the flat and flat rickety we have enlargement below the brim above the normal capacity. The funnel-shaped pelvis (high assimilation of promontory) has an enlarged upper strait and longer conjugate, with the cavity sloping down and in, a narrow pubic arch, and lessened bis-ischial diameter as the hindrance to labour. No mere linear standard can therefore be laid down for brim or cavity.

At the *outlet* we need only consider the funnel-shaped and hunchback pelvises. If, in a pure justo-minor form, the head can pass the brim, it will also pass the cavity and outlet.

In the funnel-shaped and hunchback pelvises the pubic arch is narrowed, and the ischial tuberosities approximated unduly, while in the latter the tip of the coccyx is swung forward, thus adding to the obstruction. It is generally considered that a bis-ischial diameter of 8 cm. marks the limit at and below which operative interference will be necessary.

We may say, therefore, that 9.7 to 10 cm. for the brim conjugate and 8 cm. for the bis-ischial are the guiding figures with the qualifications already given. This may be put generally by saying that a diminution of  $1\frac{1}{2}$  to 2 cm. ( $\frac{3}{4}$  in. to  $\frac{1}{2}$  in.) in a main pelvic diameter means obstructive narrowing (Sonntag, v. Winckel, ii. 3, p. 1867).

One must not forget the importance of taking into consideration the fitting of the head into the brim and at the outlet, as well as the amount of the presenting part exposed. The enlargement of the transverse of the brim in the flat and flat rickety should not be forgotten.

*Classification of Deformed Pelvis.*—This question has been almost completely ignored in British and American text-books. In foreign literature, however, many classifications have been given by Michaelis, Litzmann, Kilian, Stein, Siebold, Hohl, Schauta, Walleyer, Dohrn, Breus and Kolisko; Tarnier and

Budin, and La Torre. No original classification is given in any British and American text-books, but Williams and De Lee quote Litzmann's, Tarnier and Budin's, and Schauta's. All the given classifications are anatomical or dimensional: Schauta's to a certain extent is etiological, but none are consistent, although in many cases convenient.

Litzmann's classification is as follows (1861):—

GROUP I. Narrow pelvis without departure from the normal form.

*The juvenile or equally generally narrowed pelvis.*

GROUP II. Narrow pelvis with departure from the normal form.

Division I. (Gattung).

*The flat pelvis.*

Subdivision (Art.) 1.

*The simple flat pelvis.*

(1) *The simple flat non-rickety pelvis.*

(2) *The simple flat rickety pelvis.*

Subdivision 2.

*The generally narrowed flat pelvis.*

Division II.

*The transversely narrowed pelvis.*

Division III.

*The oblique pelvis.*

Subdivision 1.

*The pelvis obliquely deformed on account of scoliosis.*

Subdivision 2.

The pelvis oblique on account of hindered use or disuse of an under extremity.

(1) *In consequence of a lateral coxitis.*

(2) *In consequence of amputation of a lower extremity.*

(3) *In consequence of an old one-sided dislocation of the femur upwards and backwards.*

Subdivision 3.

Pelvis oblique on account of a high degree of asymmetry of the sacrum.

(1) *Primary defective growth or development of the ala sacri on one side, with secondary obliquity of the pelvis and ankylosis of the sacrum and innominate bone.*



- (2) *Blending of sacrum with innominate bone in earlier life; hindered growth of the blended parts; asymmetry of the sacrum and secondary obliquity of the pelvis.*
- (3) *Asymmetry of the sacrum in consequence of one-sided caries of the ilio-sacral joint, with loss of substance, secondary obliquity, and ankylosis as a result.*

#### Division IV.

The pelvis compressed on itself.

Subdivision 1.

*Osteomalacic pelvis compressed on itself.*

Subdivision 2.

*Rickety pelvis compressed on itself.*

The idea in Litzmann's system is "dimensional," which, although convenient in certain aspects, separates pelvises allied in their causation, and also practically excludes antenatal causes. The Robert and Naegle pelvises are put in separate divisions although similar in essence. The hunchback pelvis is not included, although Rokitsansky (see English translation in 1849-52) did valuable work on it. Curiously enough, Virchow in his *Pathological Archives* paid scant attention to deformities of the bony pelvis, and only five references to the pelvis are given in them.

#### *Schantz's Classification (1889).*

#### I. Anomalies of the pelvis in consequence of defective development.

1. *Generally and equally narrowed non-rickety pelvis.*
  - (a) *The juvenile pelvis.*
  - (b) *The marked male pelvis.*
  - (c) *The dwarf pelvis.*
2. *Simple flat non-rickety pelvis.*
3. *Generally narrowed flat non-rickety pelvis.*
4. *Narrow funnel-shaped pelvis; fetal or prone pelvis (Liegebecken).*
5. *Defective development of one ala sacri (Naegle).*
6. *Defective development of both alae sacri (Robert).*
7. *Generally large pelvis.*
8. *Split pelvis.*

## II. Pelvic anomalies on account of diseases of pelvic bones.

1. *Rickets.*
2. *Osteomalacia.*
3. *New formations.*
4. *Fracture.*
5. *Atrophy, caries, necrosis.*

## III. Anomalies of the union of pelvic bones with one another.

## (a) Synostosis.

1. *Of the symphysis.*
2. *Of one or both sacro-iliac synchondroses.*
3. *Of the sacrum and coccyx.*

## (b) Too loose union or separation.

1. *Of the pelvic joints.*
2. *Dislocation of coccyx.*

IV. Anomalies of the pelvis through diseases of the trunk, skeletal portion (*belastenden Skelettheile*).

1. *Spondylolisthesis.*
2. *Kyphosis pelvis.*
3. *Scoliosis pelvis.*
4. *Kyphoscoliosis pelvis.*
5. *Assimilation pelvis.*

V. Pelvis anomalies through diseases of the lower limbs (*belasteten Skelettheile*).

1. *Coxitis.*
2. *Dislocation of one head of the femur.*
3. *Dislocation of both femoral heads.*
4. *Double or single club-foot.*
5. *Defect or curvature of one or both lower extremities.*

This is a marked advance on Litzmann's system. In Division I., however, antenatal and postnatal influences are classed together, and thus this group is heterogeneous.

Breus and Kolisko give the following:—

## I. Abnormal pelves, the consequence of disturbances of embryonic development and of extra-uterine growth.

1. *Deformity pelves.*
2. *Assimilation pelves.*
3. *Dwarf pelves.*
4. *Giant pelves.*
5. *Rickety pelves.*
6. *Dimensional anomalies.*

II. *Abnormal pelvis, the consequence of diseases of the pelvic bones and their synchondroses.*

1. Osteomalacic pelvis.
2. Osteomyelitic pelvis.
3. Synostoses pelvis.
  - (a) Naegele's pelvis.
  - (b) Robert's pelvis.
  - (c) Late synostoses.
4. Exostosis pelvis.
5. New growths in pelvis.
6. Fracture pelvis.
7. Laceration pelvis.

III. *Abnormal pelvis from vertebral column anomalies.*

1. Spondylolisthesis.
2. Kyphosis pelvis.
3. Scoliosis pelvis.
4. Kyphoscoliosis pelvis.
5. Rickety curvatures of the vertebral column.

IV. *Abnormal pelvis as the consequence of anomalies of the lower extremities.*

1. Dislocation pelvis.
2. Coxitis pelvis.
3. Asymmetry of the lower extremities and combinations.

V. *Abnormal pelvis from anomalies of the central nervous system.*

This is an excellent catalogue, and the addition of abnormalities of the pelvis from anomalies of the nervous system is new.

We need not detail any others; they will be found in Breus and Kolisko (I. 58 *et seq.*).

We now go on to detail a purely etiological classification, with remarks on the essential nature of some of the classified deformities. This classification is one suited for investigation and not for teaching, where one must just give a convenient catalogue of the main deformities for a student's or practitioner's necessities.

*The Author's Etiological Classification of Deformed Pelvis.*

GROUP I. From anomalous antenatal distribution of size—symmetrical.

1. *Æquabiliter justo-major.*
2. *Æquabiliter justo-minor, non-rickety.*
3. *Dwarf pelvis.*

GROUP II. From antenatal losses of determinants at maturation; from variation in assimilation of promontory.

1. Loss of chromatin determinants at maturation (ejection of polar bodies), causing absence of certain factors of adult unit characters.

- (a) *From loss of certain determinants for size and nutrition of one ala sacri* (NÆGELE PELVIS).
- (b) *From loss of certain determinants for size of both alae sacri* (ROBERT PELVIS).
- (c) *From failure in closure of cloacal membrane and symphysis mesoblast* (SPLIT PELVIS).
- (d) *From high and symmetrical or lateral assimilation of sacral promontory* (FUNNEL-SHAPED PELVIS).
- (e) *From loss of determinants for sacrum* (ABSENCE OF SACRUM). (Cases by F. Litzmann and others.)
- (f) *From loss of determinants for part or entirety of first sacral vertebra.* (Cases in Quain's *Anatomy*, "Osteology," p. 33).
- (g) *From partial inversion of pelvic determinants for anterior and posterior segments of bony pelvis.*
  - 1. *Iliac inversion giving non-rickety justo-minor pelvis.*
  - 2. *Ischiopubic inversion simulating funnel-shaped pelvis.*
- (h) *From loss of determinants of size and nutrition for bones arising in early endochondral ossification* (ACHONDROPLASIC PELVIS).
- (i) *From non-union of ossific nuclei of last lumbar vertebra* (SPONDYLOLISTHESIS).

GROUP III. From disturbed and increased or absent leg resistance owing to—

- a. *Club-foot.*
- b. *Prone pelvis* (*Liegebecken*).
- c. *Defects, curvatures, or dislocations of lower limbs.*

GROUP IV. From overweighting of pelvis by early undue pressure in childhood (*Flat non-rickety pelvis*).

GROUP V. From previous constitutional bony disease causing pelvic deformity owing to incomplete resistance of pelvis to downward body weight and upward leg resistance. The bony disease may be—



- a. Rickets.
- b. Tubercular caries.
- c. Osteomalacia.

(a) Rickets.

- 1. *Simple flat rickety pelvis.*
- 2. *Scoliorhachitic flat pelvis.*
- 3. *Flat rickety generally narrowed pelvis, with iliac inversion.*
- 4. *Pseudomalacosternorhachitic.*

(b) *Tubercular disease of ilio-sacral synchondroses on one or both sides.*

- 1. *One ilio-sacral joint involved (PSEUDO NAEGELE).*
- 2. *Both ilio-sacral joints involved (PSEUDO ROBERT).*

(c) *From osteomalacia (OSTEOMALACIC PELVIS). See, however, V. (a), 4.*

GROUP VI. From tubercular caries of spine, with pelvis free.

- a. *From tubercular spinal kyphosis (HUNCHBACK PELVIS).*
- b. *From combination of spinal kyphosis and scoliosis (HUNCHBACK OBLIQUE (KYPHOSCOLIOSIS)).*

GROUP VII. From new growths.

GROUP VIII. From nervous dystrophia.

GROUP IX. Miscellaneous, and comprising conditions not interfering with labour.

In a little detail some of the above groups may be considered.

GROUP I. From anomalous antenatal distribution of size—symmetrical.

- 1. *Æquabiliter justo-major.*
- 2. *Æquabiliter justo-minor.*
- 3. *Dwarf pelvis.*

The *æquabiliter justo-major* form means an increase in the pelvic diameters of at least 2 cm. It occurs in very well-developed women, but not always. It is not of special obstetric significance.

The *æquabiliter justo-minor* is a well-known form, said to be specially common in Berne. I have considered it in a previous paper (see *Edin. Med. Journ.*, January 1916), and think it probably due to an inversion of the ilium—that is, this deformity has a male ilium instead of the usual female one. It is of importance to note that it is non-rickety. This is the real justo-minor form. The dwarf pelvis is either that of a tiny person or is to be classed with achondroplastic, cretin, etc.

GROUP II. From antenatal losses of determinants at maturation ; from variation in growth of promontory.

The view taken is, that at maturation certain determinants for pelvic unit characters are thrown off, and thus we get (*a*) the *Naegele pelvis*, where the determinants for size of one ala sacri are lost, and (*b*) the *Robert pelvis*, where those for both ala sacri are thrown off (see *Edin. Med. Journ.*, January 1917).

In (*c*) the *split pelvis*, we have a very remarkable and somewhat rare form. The symphysis pubis ends may alone be widely apart, and it may be accompanied with various degrees of epispadias or complete extroversion ; vesicae may be present. It is due to a varying amount of non-completion of the cloacal membrane, but this will be discussed in a future paper.

(*g*) From partial inversion of pelvic determinants for anterior and posterior segments of the bony pelvis (see *Edin. Med. Journ.*, January 1917).

(*h*) The achondroplastic pelvis is markedly deformed. Achondroplasia occurs in the bones developing in early endochondral ossification, as Symington and A. Thomson first pointed out. These bones are discrete in the skeleton and comprise the basis cranii, arms, legs, ribs, and pelvis. I regard this deformity as due to a polar loss in this group of bones or bony unit characters. Murk Jansen's view, that it is mainly an anterior shortening of the basis cranii during an early hydramnios, ignores the equable pressure of this entirely hypothetical increase, and does not explain how the limbs, ribs, and pelvis are distorted.

GROUP V. From previous constitutional bony disease causing pelvic deformity owing to incomplete resistance of pelvis to downward body weight and upward leg resistance.

The form which is most interesting is the flat rickety generally narrowed pelvis—an extreme grade of distortion. In this pelvis there is marked rickets, but also an *inversion of the ilium* hitherto unrecognised. This pelvis is flat, rickety, generally narrowed, with iliac inversion, and will be considered in a subsequent paper.

Breus and Kolisko give an interesting account of the influence of central nervous diseases on the bony pelvic structures (III. 621).

LITERATURE.—See Breus and Kolisko and author's previous papers on the Inverted, Naegele, Robert, and Hunchback Pelvis (*Edin. Med. Journ.*, 1916 and 1917).

## THE "NASAL" NEUROSES, REGARDED AS SENSITISATIONS OF THE RESPIRATORY TRACT.

## A RÉSUMÉ OF RECENT LITERATURE.

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A REALLY comprehensive abstract dealing with the neuroses of the respiratory tract should be the product of "team-work." The team should consist of a physiologist, a pathological chemist, a neurologist, an internist, and a rhinologist. Such a team, difficult to collect in peace time, is at present out of the question. With this apology the abstractor presents some recent views—mainly those of American writers—regarding the respiratory neuroses, which may perhaps be better described as sensitisations of the respiratory tract."

The nasal mucous membrane consists of several layers. If we take the inferior turbinals as an example we find that next to the bony core of the turbinal there is a layer of periosteum containing numerous elastic fibres. Just outside this lie the larger blood-vessels and nerves. To a microscopist not accustomed to the examination of the nose the nasal blood-vessels appear to have remarkably thick walls. In the delicate submucous connective tissue we find a large number of thin-walled blood sinuses, which compose the erectile tissue of the turbinal. Along with these there are numerous mucous glands, the ducts of which open at various points on the surface. The superficial epithelium consists of several layers of cells, the most superficial of which is of the ciliated columnar variety, while the deeper cells are spindle-shaped and cubical. The latter lie on a delicate basement membrane. The elastic fibres from the periosteum radiate out and surround the blood sinuses and mucous gland: they end in a fine network beneath the basement membrane. These fibres no doubt aid in the shrinkage of the nasal mucosa when the vascular engorgement of the blood sinuses is over. Although the structure of the mucous membrane lining the nasal accessory sinuses and the lower portions of the respiratory tract is less complicated than that covering the turbinals, the difference is only one of degree.

The nasal mucosa appears to be constantly passing through three stages—(1) engorgement, (2) stage of secretion, followed by (3) a resting stage. If we test our nasal passages by stopping each

nostril alternately and breathing through the other, most of us will find that at any given moment we have one more or less patent nostril and one somewhat obstructed. If we investigate again after a varying period we may find that the previously clear side is now obstructed and *vice versa*.

In the milder varieties of nasal neurosis only the upper part of the respiratory tract is involved. The patients complain of intermittent blocking of the nasal passages, especially at night. This condition is often seen in overworked people, especially in brain workers, and is not infrequently met with in medical students studying for examinations. In the second degree of nasal neurosis we have increased secretion, and frequently attacks of sneezing along with the nasal obstruction. The sneezing attacks are often of a violent and prolonged character. In the last and most severe form the lower portion of the respiratory tract is also involved, and we have well-developed attacks of asthma and increased bronchial secretion.

The nasal neuroses have long been the opprobrium of rhinologists. This is not to be wondered at, considering our ignorance of the anatomical, physiological, and pathological conditions concerned in their production. Many of the nasal neuroses are erroneously attributed by patients to the effects of chronic or recurrent "colds" in the head—that is to say, to attacks of rhinitis or coryza. It must be obvious to us that many of these cases are not really due to infectious rhinitis, *i.e.* they are not caused by bacterial infection of the nasal or respiratory mucous membrane. For instance, a patient complains that, on getting out of bed in the morning, he immediately suffers from a sudden attack of sneezing. Here the reflex is much too quick to be due to any bacterial or toxic action.

That the condition of the nasal mucosa is under nerve control is shown by the effect of certain emotional states. This is well illustrated in the common phrase "open-mouthed with astonishment." The astonished person opens his mouth because his nose is obstructed by reflex engorgement of the nasal mucosa. The nerve mechanism involved does not belong to the voluntary or "animal" portion of the nervous system, but to the involuntary or "vegetative" system (see later). From the point of view of development, as well as from that of staining reaction, there appears to be a close connection between the vegetative nervous system and certain of the ductless glands. As our knowledge of the endocrine glands increases it is to be hoped that we may arrive



at a more rational treatment of the nasal neuroses as well as of many other difficult and obscure conditions. It must, however, be admitted that at present treatment of the nasal neuroses by the administration of extracts of the ductless glands is apt to partake of the nature of "blunderbuss" therapy.

It is a remarkable fact that the nasal reflex neuroses are much more common among the so-called "better" classes than among hospital patients. This fact is said to have led certain observers who were treating hay fever by the injection of the serum of horses immunised to pollen toxin to use only thoroughbred horses in their experiments.

Shurley<sup>19</sup> holds that the so-called "nasal neuroses" are really sensitisations of the respiratory tract. They should be classified as follows:—I. Cases sensitised to the pollen of certain grasses and plants; II. Those sensitised to certain kinds of food; and III. Cases which are sensitised to a particular microbe or microbes, *i.e.* patients liable to recurrent attacks of coryza or "cold in the head."

#### PHYSIOLOGY.

*The Nerve Mechanism Involved.*—Fetterolf,<sup>8</sup> following the work of Eppinger and Hess, states that the nervous system may be divided into two sections—(1) the animal, and (2) the vegetative. (1) The animal group consists of sensory and motor fibres, and supplies the organs of sensation and the voluntary muscles. (2) The vegetative system, on the other hand, supplies all glands that have ducts and all involuntary muscle tissue. The vegetative system consists of two distinct parts—(*a*) the autonomic, and (*b*) the sympathetic systems. These two cannot be separated by dissection, but through various tests their individuality has been established beyond question.

The place of origin of the vegetative fibres is the brain and spinal cord. The sympathetic portion arises from the cord alone, beginning at the second thoracic nerve and continuing down to and including the second lumbar.

The fibres which comprise the autonomic portion arise in part from the brain stem and in part from the sacral region of the cord. The former—with which we are concerned in this abstract—are contained in the third, seventh, ninth, tenth, and eleventh cranial nerves. Those of the third nerve go to the ciliary ganglion, whence other neurons take up the impulses and carry them to the ciliary muscle and the sphincter of the iris.

The autonomic fibres of the seventh nerve (pars intermedia of Wrisberg) with those from the ninth, tenth, and eleventh go to sundry ganglia whence secondary or post-ganglionic fibres emerge. These innervate the blood-vessels of the mucous membrane of the mouth, throat, nose, and paranasal sinuses, the salivary glands, the heart muscle, the glands and musculature of the trachea and bronchi, the glands and musculature of the digestive tube from the oesophagus to the colon, as well as the blood-vessels and tubules of the kidney. In action the two groups—the autonomic and the sympathetic—are antagonistic, and it is generally conceded that all glands which possess ducts and all involuntary muscles receive a supply from both. *Upon the maintenance of a proper balance between the two depends the normal functioning of the structures to which they go.* If the autonomic supply is irritable, the organ will over-functionate in one direction. We then have the condition of “*vagotonia*,” i.e. hypertonus of the above-mentioned group of nerves called the “extended vagus.” If the sympathetic is in a condition of hypertonus—“*sympatheticotonia*”—the excessive action will be in the other direction. The results are manifested by hyper- or hypo-secretion on the one hand, or by spasm or relaxation on the other, i.e. in vagotonia we have hypersecretion and spasm, while in sympatheticotonia we have hyposecretion and relaxation.

The control of the entire vegetative system, both autonomic and sympathetic, is believed to lie in the cerebro-spinal axis, where possibly a regulating centre exists, and in the glands of internal secretion, the so-called “endocrinous glands.” Adrenin has been shown to act generally as a stimulator to the entire distribution of the sympathetic group. For the autonomic system no drug has been found which acts uniformly upon all parts. The nearest approach to such a drug is atropin, which is a sedative to practically the entire autonomic system, dilating the pupil, checking the flow of saliva and sweat, and relaxing contracted involuntary muscle. Pilocarpin has a powerful effect upon the salivary and sweat glands, producing over-secretion, and hence it is clearly to be regarded as a stimulator of part of the autonomic system. Pilocarpin (grs.  $\frac{1}{16}$ – $\frac{1}{8}$  hypodermically) is used in testing for the presence of vagotonia. If the test is positive we get salivation, lacrymation, sweating, cardio-respiratory arrhythmia, and hyperperistalsis—all these out of proportion to the size of the dose. In vagotonia we also have a relative decrease of the reaction to a sympathetic stimulant, such as adrenin. The symptoms of vago-

tonia in general are those of stimulation of the autonomic system, *e.g.* cramp of the ciliary muscle, spasm of accommodation and widening of the palpebral fissure (otic ganglion), salivation, congestion and hypersecretion in the nose and pharynx (sphenopalatine and submaxillary ganglia), bronchial asthma and hypersecretion, laryngeal crisis, bradycardia, gastric crisis, hyperperistalsis, and excessive gastric and intestinal secretion (vagus). The blood-picture shows an excess of eosinophiles.

The medical treatment of vagotonia may take one of two forms—(1) sedative treatment of the autonomic system; or (2) stimulation of the sympathetic. For example, spasmodic bronchial asthma may be treated by quieting the autonomic system with atropin or by stimulating the sympathetic by the local or hypodermic use of adrenin.

Brubaker<sup>3</sup> points out that the nasal mucous membrane is thick and spongy and is provided with a large number of glands, both mucous and serous. In order that the glands may be enabled to elaborate the necessary amount of secretion it is essential that the vascular supply should be varied from time to time. The secretion of the glands as well as the blood-supply impart to the nasal chambers that degree of moisture and temperature necessary to prepare the inspired air for its entrance into the lower respiratory tract. The nerves distributed to the blood-vessels and glands belong to the autonomic system and hence consist of two consecutively arranged neurons.

*The Efferent Nerve Mechanism.*—This consists of pre-ganglionic and post-ganglionic fibres. The latter directly excite to activity the epithelium of the glands and relax the muscle fibres of the blood-vessel. They originate in the sphenopalatine (Meckel's) ganglion, situated in the sphenomaxillary fossa. [The otic, sphenopalatine and submaxillary ganglia, though anatomically associated with the trigeminal nerve, are not integral parts of it; they belong to the autonomic system, and are associated with the vasomotor and secretory system of nerves. They possess neither sensory nor motor functions.] From their origin in Meckel's ganglion the nerve fibres pass to the glands and blood-vessels of the nasal chambers, palate, and upper portion of the pharynx. The ganglion cells, though irritable, are devoid of automatic action, and must be excited by nerve impulses discharged by the nerve cells in the central nervous system and transmitted by the pre-ganglionic fibres. These fibres originate in nerve cells situated

in the grey matter beneath the floor of the fourth ventricle. From this they pass forwards and emerge from the side of the medulla between the facial and acoustic nerves as the *pars intermedia* of Wrisberg, of which they constitute a part. The nerve of Wrisberg accompanies the facial as far as the geniculate ganglion, but then leaves it to pass forward to the sphenopalatine ganglion as the great petrosal nerve. In this way nerve impulses discharged by the central cells are transmitted by the nerve of Wrisberg and the great petrosal to the cells of the sphenopalatine ganglion, which in turn discharge impulses that are distributed in a spray-like manner to the glands and muscular walls of the arterioles. Experiment has shown that, if the great petrosal nerve is exposed and divided and the peripheral end stimulated, we get a dilatation of the blood-vessels and a discharge of secretion from the glands of the mucous membrane of the nose and associated structures. The great petrosal nerve therefore contains both secreto-motor and vasodilator fibres.

The degree of contraction of the blood-vessels of the nasal mucosa is regulated partly by vasoconstrictor nerves, which also consist of two consecutively arranged neurons and therefore belong to the autonomic system. The peripheral neuron arises in the superior cervical ganglion, from which post-ganglionic fibres pass upward and assist in the formation of the plexus on the internal carotid artery. At the point where the great petrosal nerve crosses this artery some of these sympathetic fibres enter its sheath and accompany its branches to their terminations in the blood-vessels and possibly also the glands. The pre-ganglionic fibres originate in the cells of the general vasoconstrictor centre beneath the floor of the fourth ventricle. From this the fibres descend the spinal cord to pass out in the ventral roots of the upper thoracic nerves, and thus reach the vertebral chain of sympathetic ganglia to pass upwards to the superior cervical ganglion. There is thus a rather circuitous pathway between the vasoconstrictor centre and the blood-vessels of the nasal mucous membrane. Experiment has shown that if the cervical sympathetic cord be divided the blood-vessels of the nasal chambers, as well as those of the entire side of the head and face, will markedly dilate for some days. If the peripheral end of the divided cervical sympathetic cord is stimulated the blood-vessels at once contract. It will thus be seen that the blood-supply of the nasal mucosa is under the control of two antagonistic groups of nerves—dilator and constrictor. The calibre of the vessels at



any moment is the resultant of the relative degree of activity of these two groups.

*The Central Mechanism.*—The nerve cells of the two groups—vasodilator and vasoconstrictor—possess a certain degree of tonicity. They may be excited or inhibited by nerve impulses (1) transmitted from the nasal chambers by the nasal and other branches of the trigeminal nerve and from the skin by the cutaneous nerves (reflex or peripheral stimulation); (2) descending from the cerebrum in consequence of psychic states of an emotional character (direct or central stimulation). It is evident from a study of pathological conditions that the tonus of one or more of these centres may be abnormally increased or decreased by changes in their nutrition caused by the toxic products of metabolism, *e.g.* dietetic or alcoholic excesses, insufficient physical exercise or fresh air. If the tonus of the central mechanism is impaired, peripheral causes, which at one time would produce little or no effect, now give rise to pronounced and distressing symptoms.

*The afferent nerve mechanism* is to be found in the branches of the trigeminal nerve. The cells of the semilunar (Gasserian) ganglion give origin to a short process which soon divides into two branches, one of which passes centrally, the other peripherally. The central branch forms the large or sensory route. The peripheral branches constitute the three main divisions of the nerve. The axons of the central branches after entering the pons ultimately arborise around the vaso-inhibitor and vasoconstrictor and secreto-motor centres. The peripheral branches pass forward to be distributed to the skin, mucous membrane, and other structures of the head and face. Other of the central branches arborise around "sensor-end-nuclei," the axons of which pass upward to arborise around sensory nerve cells of the cerebral cortex. Stimulation of the first group calls forth reflex phenomena; stimulation of the latter group produces pain.

*Peripheral Stimulation of the Central Mechanism.*—The stimulus to the peripheral terminations of the nasal and cutaneous nerves is the variation in temperature and moisture of the air. The amount of heat radiated from the blood and the amount of secretion produced by the glands ought to vary with the varying temperature and moisture of the inspired air. The reactive adaptation of the individual varies with his age, sex, occupation, habits, and the stability of his nerve centres. If a fairly normal individual be subjected to a temperature of 60° F. it will be found that the

blood-vessels of the nose will possess a certain calibre, the resultant of the co-operative action of the vasodilator and vasoconstrictor nerve centres. This calibre will permit the passage of a definite volume of blood with a definite velocity in a unit of time carrying with it a certain volume of heat. If the external temperature should fall to 30° F. the arterioles of the nasal mucous membrane contract as the result of the now preponderant action of the vasoconstrictor centre due to the stimulation of the afferent nerve endings by the cold air. At first sight this would appear to diminish heat radiation, but it must not be forgotten that though the thickness of the blood-stream is diminished, its speed is increased, so that the temperature of the air is correspondingly raised. On the other hand, should the external temperature be raised to 90° F., the blood-vessels will dilate, the thickness of the blood-stream will be increased, and its speed diminished. With regard to the secretory mechanism, similar statements may be made.

#### I. INHALATION ANAPHYLAXIS, HAY FEVER OR POLLINOSIS.

*Pathology.*—Manning<sup>16</sup> defines hay fever as an exudative catarrh of the conjunctival, nasal, and tracheo-bronchial mucous membrane, produced in hypersensitive individuals by the sensitising and anaphylatoxic action of the pollen of certain plants. The mucous membrane of the respiratory tract affords a ready means of access for the entrance of certain foreign proteids into the body. Hay fever must not be confused with hyperæsthetic rhinitis, which may occur at any time of the year, and does not carry with it the general constitutional depression which is so characteristic of true hay fever.

Manning states that the bactericidal power of the nasal secretion is due to a proteolytic enzyme. The pollen protein reaches the nasal mucous membrane of all persons, and in most of them the enzyme gradually splits the pollen protein into harmless products—proteoses and amino acids. This occurs slowly, so that the absorption of protein is exceedingly minute. Certain obscure conditions interfere with the normal digestive function of the nasal mucosa. When these conditions arise, sufficient protein may be absorbed to lead to sensitisation. Whatever the cause of the disturbance, there occurs an intake of foreign protein which so injures the mucosa that it remains permanently in a state of increased permeability for the protein.

According to Cooke,<sup>17</sup> any form of foreign protein introduced within the living body gives rise to the formation of a specific

immune or antibody, which exists either attached to certain cells or free. When union takes place between protein and free antibody there is no clinical evidence of a reaction, but when a union takes place between protein and fixed antibody a reaction takes place. When there is a large excess of antibody circulating free we have an immune state, and when there is little antibody, and that for the most part attached, we have the sensitised state (anaphylaxis). With cessation of protein injection the body returns to the anaphylactic state, *i.e.* the duration of immunity is strictly limited. We do not know why a certain group of individuals become and remain sensitised, though we know that the capacity is largely inherited (64 per cent. of cases).

Grayson<sup>12</sup> states that we have not so far been able to arrange with accuracy the sequence of events which terminate in enfeeblement of vasomotor control. Grayson himself finds that two-thirds of his cases have given a history of inherited neurotic tendency. In all the other (acquired) cases there were reasons of an emotional, mental, or physical nature to account for that general nervous exhaustion of which the loss of vasomotor equilibrium was but a symptom and a sequel. Grayson finds that there is a third group of cases, which can be explained upon the theory of anaphylactic reaction. In these it is usual to find urticaria on the skin as well as other areas of angioneurotic oedema, besides that in the nose. Grayson holds that the internist, the neurologist, and the rhinologist are all concerned in the treatment of these cases. He believes that in a very large percentage the neurasthenia primarily and the nasal neurosis secondarily are the products of a long-continued violation of the laws of personal hygiene, particularly those concerning diet, exercise, work, and play. He regards the relationship of the vasomotor neuroses of the nose to abnormal metabolism as well established.

Oppenheimer and Gottlieb<sup>13</sup> state that heredity plays a very important *role* in the etiology of pollinosis. Over 90 per cent. of patients have other members of their family who suffer from allied ailments, such as urticaria, asthma, or other manifestations of anaphylaxis, following the ingestion of casein, egg-white, shell fish, or are sensitive to dust or the serum of horses and cats. The nasal factor should not be considered as too important; many patients have had considerable surgical treatment of the nose, and it has been in but the rarest instance that benefit has resulted. Marked stenosis or suppurative processes in the accessory nasal cavities should, however, be corrected. The abstractor has found that if a

patient suffering from a nasal neurosis presents a marked nasal abnormality, such as a very deflected septum with turbinal enlargement, all that one can safely say is that operation will ensure free nasal respiration. If the neurosis is benefited or cured, the patient must be thankful, but he must not count on this result.

Plants which are wind fertilised and therefore distribute a large amount of pollen in the air excite hay fever symptoms. There are more than fifty plants to the pollen of which hay fever subjects may be sensitive (Goodale<sup>10</sup>). (Plants which are fertilised through the agency of insects need not be considered.) If hay fever symptoms occur previous to the flowering of the grasses we have to look for the exciting cause in the early flowering shrubs and trees, *e.g.* birch and willow. Hay fever due to the grasses usually begins in this country in the early part of June. Noon<sup>17</sup> and Freeman<sup>9</sup> have shown that the injection of a solution of the pollen from one species of grass can protect against other grasses. Goodale's experience confirms this observation. The compositæ may also give rise to hay fever, and here again the proteid of all members of this family is essentially the same. The active pollen of one species will, for diagnostic purposes, cover the whole order. According to Goodale the chief causes of hay fever are the grasses and the late compositæ.

*Symptoms.*—Wilson<sup>22</sup> divides the symptoms of hay fever as follows:—(a) Characteristic symptoms—itching, redness and swelling of the mucous membrane of the eye, nose and throat, with lacrymation, sneezing, and rhinorrhœa: hay fever patients, especially those who breathe through the mouth, inhale into their bronchial tubes large quantities of pollen, which cause swelling of the mucous membrane with the production of typical asthma. Asthmatic symptoms may be perpetuated throughout the year owing to secondary bacterial infection. (b) Miscellaneous symptoms—fever, malaise, and asthenia. Vomiting, diarrhœa, and cardiac troubles are occasionally met with.

*Diagnosis.*—Three methods may be employed for determining to which pollen a patient is anaphylactic—(1) The ocular; (2) the hypodermic; and (3) the cutaneous method. The ocular method is very convenient, and is advocated by some well-known commercial firms which put up a hay fever reaction outfit. Full instructions for the use of this outfit are enclosed, but briefly it may be said that the procedure is carried out on the lines of the Calmette ophthalmo-reaction for tuberculosis. Oppenheimer and Gottlieb advocate the cutaneous method. A very small scratch, not enough



to produce bleeding, is made on the arm, and a very minute quantity of pure pollen is gently rubbed in. In a few minutes a wheal develops. The swelling and redness are measured after fifteen minutes. Similar vaccinations are made during the course of treatment so as to determine whether the size of the wheal diminishes as immunisation progresses. The intensity of the skin reaction is not always proportionate to the clinical symptoms. In children the skin disturbances are less pronounced than in adults.

*Treatment.*—According to Grayson, no one will claim that the cauterisation of hyperaesthetic areas of the nasal mucous membrane is a rational treatment of hay fever, because it is not directed against the cause of the disease.

Until now the treatment of the nasal neuroses has been almost purely empirical. We have attacked the nasal mucosa by the direct application of an extraordinary number and variety of remedies, we have cauterised and even removed it more or less extensively, but seldom with any better result than incomplete and temporary relief (Grayson).

1. *Passive Immunisation.*—One may attempt to combat hay fever by adding some substance to the organism which will neutralise the poisonous fraction of the split protein molecule. Dunbar's "pollantin" is an attempt at passive immunisation. Dunbar injected horses with gradually increasing doses of ragweed pollen with the expectation that a specific antibody would be formed in the serum in sufficient amount for practical use. It must be admitted, however, that this method of treating hay fever has not proved a great success. Recently attempts have been made to revive this method in order to deal with cases which are not able to develop for themselves enough immune body. One large dose of blood-serum from a rabbit that has had large quantities of pollen injected at regular intervals for about five months is given to the patient. In this way anaphylaxis is avoided.

2. *Active Immunisation.*—One may try to develop in the tissues of the individual a substance which will neutralise the poisonous fraction. In 1910 Noon and Freeman made the first attempt at active immunisation, working with the pollen of grasses. The pollen is collected and dried, and a weighed portion is then ground with sand in an agate mortar together with a small quantity of saline solution. More salt solution is now added, and the whole incubated for twenty-four hours. The mixture is centrifugalised and the clear supernatant fluid used as a basis for

subsequent dilutions. The term "pollen-unit" means the soluble protein contained in 1/1,000,000 grm. of dried pollen. As regards dosage, it is quite safe to begin with one or two units. In many cases considerably more than 1000 units may be safely given after a sufficiently extended preliminary desensitisation. Injections should be given at intervals of three to five days.

Dilutions of the pollen extract are most conveniently made by adding a certain amount of the stock solution to alcohol of the same strength so as to make a 25 per cent., or a 10 per cent., or a 1 per cent. dilution. The initial dose is determined by the dilution which fails to excite a definite reaction in the eye or on the skin. The quantity of material injected hypodermically should not exceed five or ten drops. Before beginning the injections it is best to wait until the reaction from the skin tests has subsided. *The prophylactic injections should be begun about two months before the hay fever season*, and should be given at intervals of from five to seven days, increasing by a few drops at first, and later by the adoption of stronger percentages of the stock solution. To avoid anaphylactic disturbances, Goodale advances the strength at first very slowly. Hypodermic injection of the extract gives rise to a well-defined lump, varying from the size of a bean to that of a pigeon's egg, accompanied by moderate heat and itching, but the discomfort is not sufficient to cause the patient to interrupt treatment. Goodale has only had *two cases of anaphylactic shock*, i.e. faintness, nausea, and vomiting about half an hour after the administration of the extract. After the course of injections had been stopped most of the patients showed a distinct diminution in the intensity of the skin disturbance, caused by rubbing pollen extract into the scratch. Cases that only present themselves for treatment after the attacks of hay fever have begun are given *minute* doses of pollen extract on four successive days, and subsequent doses at intervals of from three to five days.

*Results of Treatment by Active Immunisation.*—Freeman reports 30 per cent. of cures, and 35 per cent. almost completely cured; Cooke 60 per cent. markedly improved, 30 per cent. improved, and 10 per cent. of failures. Oppenheimer and Gottlieb have treated fifty-two cases, of which fifteen were cured, twenty-five markedly improved, and twelve in no way modified. Goodale states that out of thirty-four cases, twenty-six were more or less relieved. Among twenty-one hay fever cases Wilson had only one cure and three markedly improved. Goodale concludes that pollen therapy in hay fever may be regarded at the present time

as a promising method of treatment, but its value and the permanence of its results remain still to be definitely established.

## II. INGESTION ANAPHYLAXIS AFFECTING THE RESPIRATORY TRACT.

Goodale<sup>10</sup> states that an individual sensitised to a given proteid may exhibit a characteristic reaction if the proteid is brought in a soluble form in sufficient concentration into contact with a scratch or abrasion of the skin. The skin of the flexor surface of the forearm is first cleansed with soap and water, and then with alcohol. In the case of very sensitive individuals it is not necessary to scratch the skin, but in less sensitive cases the epidermis is scarified, care being taken to draw as little blood as possible. The test material, *e.g.* the white of a fresh egg, is then rubbed gently into one scarification while a second one is left for a control. After five to fifteen minutes the positive reactions are indicated by varying degrees of local disturbance. In some cases the first perceptible alteration consists in a sharply circumscribed white area, not elevated, bordering the scratch for a distance of 1 to 3 mm. In others the first manifestation consists of a slightly red and raised area. In more pronounced disturbances the area of swelling is more extensive, white in colour, but surrounded by hyperemia of varying size. This degree is usually accompanied by itching. In the course of thirty minutes to one hour the reaction fades. In the case of certain proteids on the following day the borders of the scratch become red, elevated, and firm, and later a trace of suppuration may be seen. These disturbances are not due to sepsis, and disappear in two or three days.

In many cases the special exciting proteid is indicated by the patient's history, *e.g.* intolerance to fish, milk, horses, eggs, etc. In the larger number, however, the causative agent is unknown to the patient.

*Preparation of Material.*—It is of importance to have the test material in the form in which it exists when exciting symptoms, *e.g.* raw or cooked. The material should be in a stable form, and as pure and concentrated as possible. One person may react to a proteid dilution of a given strength, while another sensitised to the same proteid may require 100 times greater strength of the solution to elicit an equivalent skin reaction. Extracts from epidermal structures are easily obtained by placing scrapings from the skin, etc., in 12 per cent. alcohol. The clear filtrates keep without deterioration. In the case of animal foods, crude but satisfactory material is readily prepared by expressing the juices

in a meat press, and subjecting them to rapid desiccation by a blower. Both animal and plant extracts may be preserved when thoroughly dried without deterioration, *eg.* egg-albumen, casein, pollen, etc.

Talbot<sup>20</sup> has studied eleven cases of egg-poisoning in children. Six of the eleven cases had attacks of asthma in addition to the usual symptoms of egg-poisoning—vomiting, diarrhoea, urticaria, and eczema. The skin reaction was tested in five of the cases and found to be positive. By giving minute doses of ovomucoid by the mouth Talbot was able to produce immunity and so cure the asthma in three cases. In one he had partial success, but failed in the other two. Talbot has found that beef-juice may produce the same condition as egg-albumen.

It would take too long to go into the conflicting theories as to the pathology of asthma—(a) spasmodic, and (b) congestive. Those interested in this subject should refer to the letters by Gibson, Watson Williams, Campbell, Hare and Adam, which appeared in the *British Medical Journal* in the latter part of 1911 and the beginning of 1912.

Auld<sup>2</sup> holds that asthma is a reaction on the part of the lungs to a toxic substance either of pathological origin or else a product of normal metabolism which gradually accumulates in the blood. Auer and Lewis have shown that the lung of a guinea-pig in anaphylaxis presents conditions identical with those of bronchial asthma. The protein poison which causes the asthma is still unknown, but Auld thinks that peptone is nearly akin to the actual anaphylactic protein poison. This has been shown by Biedl and Kraus. In the treatment of asthma Auld advises the subcutaneous injection of a watery solution of peptone (Armour). He uses  $\frac{1}{2}$  gm. dissolved in 5 c.c. of distilled water at blood-heat, and injects this solution at intervals of three or four days during the first week of treatment. In the second week he gives two injections of  $\frac{2}{3}$  gm., and in the third week two injections of 1 gm. dissolved in 10 c.c. of water. In most cases this is enough, but some require further injections. There is no apparent constitutional reaction, and little or no local reaction. So far Auld's results have been very promising.

### III. ACUTE INFECTIOUS RHINITIS.

Hill<sup>14</sup> says that "colds" are most common when the humidity of the atmosphere is great and the temperature variable. Men



living open-air lives are free from colds, *e.g.* sailors on long voyages and Arctic travellers. Thus exposure even to extreme cold by itself does not occasion "colds" or pneumonia. The health of the Navy at sea in war is better than in peace; the sailors are far less exposed to temptation to over-indulgence and to infection from the civilian population in port. When children, after the holidays, return to school, epidemics of "colds" usually begin. Propinquity is required in order that the infected spray of nasal or bronchial secretion sneezed or coughed out may be transferred from the "carrier" to another victim. Cool breezes blowing round the head, the radiant heat of the sun, and a warm ground to stand on are the ideal outdoor conditions. The mucous membrane of the nose in these circumstances appears pale and taut. Indoors, when the feet are chilled by a draught blowing over a cold floor, and the head is immersed in warm stagnant air, the nasal membrane appears swollen, congested, and covered with thick secretion. This causes a feeling of stuffiness in the head, and headache felt in crowded, overheated places of assembly. A room with a gas fire fitted with no flue, so that all the heated air escapes into the room and rises, provides exceedingly bad conditions. Inhaled bacteria are caught by the swollen mucous membrane, which is covered with thick secretion. The ideal method of warming and ventilating rooms would give us abundant radiant heat, a warm floor, and agreeable movements of cool air. Such conditions are found in one-storied foundries.

Cocks<sup>5</sup> holds that the bad effects of poor ventilation are due to the inability of the body to cool itself because of the increased temperature and moisture of the surrounding air. The capacity for heat regulation depends largely upon the vasomotor system and the sweat glands. The amount of heat lost from the surface of the body by radiation and conduction depends upon the temperature of the surrounding air, the amount of heat lost by evaporation upon the humidity. Resistance to infection is influenced by cold. Pasteur found that, although the common fowl is not susceptible to anthrax, it becomes susceptible when made to stand overnight with its feet in cold water. Rabbits and guinea-pigs chilled in various ways are much more susceptible to inoculation with bacteria than control animals. Vasomotor contraction of the skin vessels due to cold is accomplished by reflex dilatation of vessels in other parts of the body. Severe muscular exertion in hot bad air leads to active dilatation of the vessels of the respiratory mucous membrane, and if there now

follows a sudden exposure to cold a condition predisposing to catarrhal inflammation is produced.

Cocks<sup>5</sup> has experimented with two rooms so arranged that any desired degree of temperature and humidity could be secured. He considers the normal temperature of a room (U.S.A.) to be 68 F., normal relative humidity 50 per cent.; cold room, temperature 50 F., relative humidity 50; hot dry room 80 to 86 F., relative humidity 20 to 30; hot moist room 80 to 86 F., relative humidity 80. He found that a large proportion of workers in hot moist rooms (steam laundries) suffered from a shrunken condition of the nasal mucosa. In passing from a normal or a cold room into a hot room there usually results an increase in colour, moisture, and size of the inferior turbinates and of the nasal mucosa generally. Conversely, on going from a hot or normal room into a cold one, there is a decrease. A second series of experiments was made to demonstrate the effect of a current of air blown directly upon the face, *i.e.* to obtain information concerning the effects of draughts on the nasal mucosa. On going from a hot dry room to a cold room in which a draught was created there was an increase in the size and moisture of the nasal mucous membrane. As a result of his experiments Cocks concludes that *the theory of bacterial infection as the sole cause of catarrhal inflammation of the upper air-passages is not tenable.*

Those who regard acute infectious rhinitis as a sensitisation of the mucous membrane of the upper respiratory tract to a certain organism, or organisms, suggest that the skin reaction of a given patient should be tested as follows:—The skin of the flexor surface of the forearm is prepared as described above, and then scarified as an ordinary vaccination. Bacterial test material is made by growing cultures on agar slants, exposing them to ether vapour for four days, and transferring the colonies to a 12 per cent. dilution of alcohol in water. The quantity of bacteria should be about one-third that of the dilute alcohol. The test material is rubbed in to the scarification and the result noted.

It would take too long to deal with the treatment of acute infectious rhinitis by means of vaccines. Those interested in this subject should consult the paper by Logan Turner and Hay Bolton (*Med. Press and Circular*, 1913, ii. 583).

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## CLINICAL RECORDS.

## CASES OF VASCULAR INJURY.

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THESE cases of vascular injury have recently come under my care at the 1st Northern General Hospital. The first, one of secondary hæmorrhage, occurred from the common femoral artery. The artery was perforated on its anterior and inner walls, the latter perforation leading directly into the femoral vein. Excision of a segment of both artery and vein with ligature of the ends was instrumental in saving the patient's limb and life. The wound was too septic and the vessel walls too friable to allow of any other measure.

The remaining cases—examples of false aneurysm—were treated by different methods.

In Case II. proximal ligature alone sufficed to cure the aneurysm. In this case pulsation ceased after ligature, and the clot became organised. Although I had previously suggested that this was unlikely to be successful, it would appear that if the region of the artery affected be free from large branches, then this simple procedure may suffice to bring about a cure. In cases where branches may enter the sac or the artery near the site of the damage, then proximal ligature alone will likely fail.

In view of the experience of Case II., Case III. was treated by proximal ligature, and although pulsation ceased for a few days it recurred later. At a second operation the circulation was controlled by a tourniquet, and the sac opened. An attempt was made to suture the two perforations in the arterial wall, but the vessel was so friable the ligature had to be substituted.

In Case IV. the sac was opened at the primary operation, and although very tense, pulsation had ceased. The brachial artery appeared in the sac as a fibrous cord, and a segment of it was removed.

In Case V., after the application of a tourniquet, the sac was opened along the inner border of the calf. A large aneurysm was found communicating with a hole in the posterior tibial artery. On separating the artery from the calf muscles a second and smaller sac, quite independent of the larger, was found in the





FIG. 1.—Segments of the Common Femoral Artery and Vein showing Perforations in the Artery and Vein (from Case I.). The anterior vessel is the artery and has two perforations in its wall. The upper part has been cut away to show the communication between the artery and vein.



FIG. 2.—Segment of the Posterior Tibial Artery showing Perforations on the Opposite Walls (from Case V.).

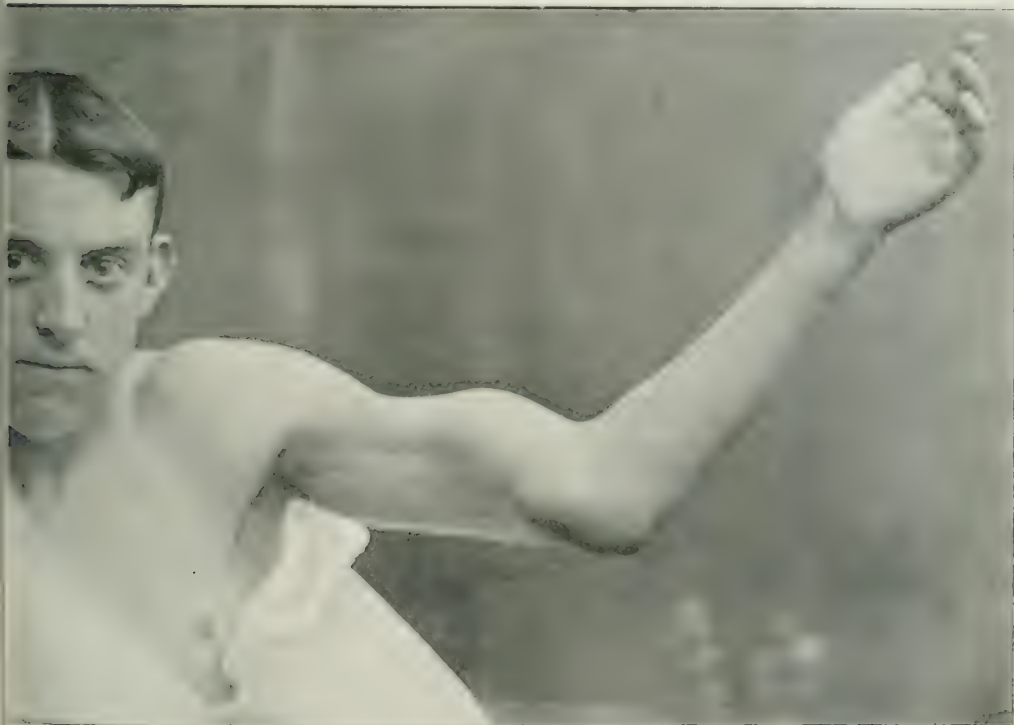


FIG. 3.—(Case IV.)—Stenographer, Poss. Arteriovenous Anomaly of the Upper Arm.



substance of the soleus muscle, communicating by a second hole in the opposite side of the artery. Here resection of the damaged portion of the artery led to cure.

CASE I.—PERFORATING WOUND OF THE COMMON FEMORAL ARTERY AND VEIN; SECONDARY HÆMORRHAGE; RESECTION OF PORTIONS OF ARTERY AND VEIN; RECOVERY.

*History.*—Corporal W. S., aged 25, was hit on 21st July 1916 by shrapnel, which wounded him in the right testicle, penis, and upper part of the left thigh. On arrival at the casualty clearing station the testicle was removed. The wound in the upper part of the thigh was opened and cleaned and a rubber tissue drain inserted. On 31st July he arrived at the 1st Northern General Hospital. All the wounds were suppurating. The drain was removed from the wound of the upper part of the left thigh, which was 2 ins. long and situated over the common femoral artery. Small fragments of metal were picked out of each wound.

On 9th August the wounds were cleaner but still discharging. At 9 A.M. a severe secondary hæmorrhage occurred from the wound in the thigh, soaking the bed. The bleeding was controlled by pressure on the external iliac artery and a tourniquet applied over a dressing on the wound.

An operation was performed at once. The wound was cleaned and enlarged. A ragged perforation, 1 cm. long, was found in the common femoral artery on its superficial aspect. The artery was isolated from its sheath above and below the perforation. The artery was held up by a loop of thread proximal to the perforation, but bleeding still occurred on relaxing the pressure. On investigating further, a second perforation was found leading into the adjacent femoral vein. The vein was now isolated above and below the perforation. It was considered too risky, on account of the sepsis, to separate and suture the vein, so both vessels were ligatured above and below the perforation and the damaged segment removed. The wound was packed with saline gauze and partly closed. The wound granulated up without incident and was healed by 20th September, on which date he was allowed up.

On 29th September he was discharged to a convalescent home, able to walk quite well.

CASE II.—GUNSHOT WOUND OF THE THIGH; FALSE ANEURYSM OF THE SUPERFICIAL FEMORAL ARTERY; PROXIMAL LIGATURE OF FEMORAL ARTERY IN HUNTER'S CANAL; CURE.

*History.*—Private B. was wounded on 4th June 1916 through the left thigh. On admission to the 1st Northern General Hospital on 14th

June there were two small scars on the opposite sides of the left thigh at a level of 3 ins. above the patella. The thigh was swollen on its inner aspect over the lower part of the vastus internus muscle. The swelling was found to pulsate and was limited to the thigh, no encroachment on the popliteal space being visible. A wound of the lower part of the superficial femoral artery was diagnosed, with false aneurysm. It was decided to try the effect of proximal ligation.

*Operation.*—The femoral artery was exposed in Hunter's canal, the walls of which were slightly blood-stained. The artery was ligatured in two places and divided between them. Pulsation at once ceased and did not return. The swelling gradually diminished in size, and he was discharged to an auxiliary hospital on 7th July, being able to walk.

He reported again at the hospital on 29th July, and the thigh was found normal in all respects. He was discharged to his dépôt.

CASE III.—GUNSHOT WOUND OF THE ELBOW REGION; FALSE ANEURYSM IN THE ANTECUBITAL SPACE; PROXIMAL LIGATION OF BRACHIAL ARTERY; FURTHER OPERATION OF LIGATION OF BRACHIAL ARTERY IN THE SAC; CURE.

*History.*—Lance-Corporal R. P., aged 21, was wounded in the left elbow on 1st July 1916. He was transferred to a general hospital in England, where he remained eleven days. After this he was sent to a Command Dépôt, from which he was admitted to the 1st Northern General Hospital on 1st August.

There was a healed wound of entry in the centre of the left antecubital fossa. The whole of this region was stained by extravasated blood and occupied by a tense swelling, which pulsated. A false aneurysm of the brachial artery was diagnosed. 7th August 1916.—On the operating table it was found that pulsation had ceased, so proximal ligation of the brachial artery was carried out, the sac being undisturbed.

9th August.—The radial pulse had returned.

20th August.—The swelling remained the same size, and pulsation had returned.

24th August.—Second operation. The sac was laid open after the application of a tourniquet. The sac seemed unduly large, and 15 ozs. of clot were removed. The brachial artery was readily found on the wall of the sac and was grooved for about an inch, a slit-like perforation being present at either end of the groove. Both perforations were closed without difficulty by two catgut sutures. The margins of the upper opening were very friable, and after releasing the tourniquet blood oozed from the opening. It was found impossible to control this by further sutures, so the artery was ligatured above and below the damaged area and divided. The wound was closed. The sutures were removed on the tenth day with aseptic healing. Some days later



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infection occurred and the wound had to be reopened. It eventually healed, with cure of the aneurysm.

CASE IV.—GUNSHOT WOUND OF THE ELBOW REGION; FALSE ANEURYSM IN THE ANTECUBITAL SPACE; EXPLORATION; LIGATURE OF BRACHIAL ARTERY IN THE SAC; CURE.

*History.*—Private R. G., aged 26, was wounded in the left arm on 1st July 1916.

Wound of entry on the middle of the outer aspect of the arm just behind the biceps. Wound of exit 1 in. above the inner condyle of the humerus. After being in several hospitals he was transferred to the 1st Northern General Hospital on 30th August. The wounds were soundly healed but the bend of the elbow was occupied by a tense painful swelling. No pulsation was present. There was no fever or discoloration of the skin. *Diagnosis.*—False aneurysm of the brachial artery, with clotting in the sac. The condition is well seen in the photograph of the arm (Fig. 3).

*Operation*—9th September 1916.—An incision was made into the sac, in the course of the brachial artery. A considerable quantity of clot was removed from the false sac. The artery was found adherent to the median nerve, and appeared as a fibrous cord, for  $1\frac{1}{2}$  in. of its length. To make sure that this was the vessel the brachial artery was exposed above the sac and traced into the cord. Nothing further was done to the artery and the wound was closed.

Restoration of function was complete, and the patient was discharged a fortnight later.

CASE V.—GUNSHOT WOUND OF THE LEG; PERFORATION OF THE POSTERIOR TIBIAL ARTERY; FALSE ANEURYSM IN THE CALF; EXPLORATION; TWO ANEURYSMS CONNECTED WITH DOUBLE PERFORATION OF THE ARTERY; RESECTION OF ARTERY; CURE.

*History.*—Private A. O., aged 36, was wounded on 4th July 1916, by fragments of shrapnel, in the left wrist, left foot, and leg. He also sustained a compound fracture of the right humerus. The wounds healed slowly. Early in August his left foot became oedematous, and it was noted that the calf was pulsating, and a false aneurysm was found to be present. The fragment of shell entered the front of the leg about 3 ins. below the knee joint and passed between the two bones.

*Operation*—16th September 1916.—After the application of a tourniquet the sac was opened by dividing the calf muscles parallel to the inner border of the tibia, as in the operation for ligature of the posterior tibial artery. The sac was emptied of clot and it was found to occupy a large space between the superficial and deep muscles. The posterior

tibial artery was found adherent to the posterior wall of the sac and a perforation was seen in its wall. On separation of the artery from the wall of the sac a second and smaller sac, about the size of a walnut, was found in the substance of the soleus muscle. It had no direct connection with the larger sac, and on farther examination a second perforation opposite the first was found in the wall of the artery. The damaged part of the artery was resected and the ends ligatured. The wound was closed. The wound healed normally, and he was able to be up in three weeks. The condition is quite cured, though he is still in hospital as the other wounds are still unhealed.

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### ARTERIOVENOUS ANEURYSM OF EXTERNAL ILIAC ARTERY.

By NEIL MACLAY, C.M., Surgeon, Northumberland War Hospital; Hon. Surgeon, Throat, Nose, and Ear Hospital, Newcastle-on-Tyne; Hon. Consulting Oto-laryngologist, Northern Command.

LANCE-CORPORAL W. N. M'K., *et.* 36, of the ——— Regiment, was admitted to the Northumberland War Hospital on 28th November 1916, suffering from gunshot wounds of the right arm and left groin.

*History.*—During a night attack delivered by the Germans he was wounded by a German officer, who fired a revolver at point blank range. In all, three shots were fired, and after an interval, M'K., who had been left for dead, managed to crawl from the outlying sap and secure first aid.

*Condition on Admission to Northumberland War Hospital.*—The right arm was encased in plaster of Paris and the skin of the axilla had been chafed by it. There were also small septic pimples on the anterior axillary fold.

There was an expansile pulsating swelling, with the characteristic thrill and bruit of an arteriovenous aneurysm, about the size of a tangerine orange, immediately above and internal to the middle of Poupart's ligament on the left side. About 2 ins. above the swelling there was a small scar where the bullet had entered.

The loud aneurysmal bruit was conducted for a short distance downwards into the femoral vessels and upward into the aorta and chest. The circulation in the left leg seemed to be unimpaired and there was no venous distension.

X-ray examination revealed a small bullet embedded in the left pubic bone below the inner third of Poupart's ligament, also a comminuted fracture of the right humerus in its middle third, with outward displacement of the lower fragment.

30th November 1916.—The plaster splint was removed; the broken



fragments were moulded into better position and the arm fixed on splints. The septic skin area in the axilla was shaved and fomented with boric lint.

26th December 1916.—Temperature 103° F. Shivering, headache, and feeling sick. Tongue very dirty. The skin over the right shoulder was acutely inflamed. Patient was transferred to the isolation ward with a diagnosis of erysipelas.

27th December 1916.—Respirations accelerated, short cough, and slightly blood-tinged sputum. Physical signs of pneumonia in right lung. Small patch. The erysipelas had now advanced over the upper chest wall.

29th December 1916.—Sputum contained streptococci. The skin inflammation spread over the whole trunk and invaded the head and neck. The physical signs of pneumonia subsided in forty-eight hours and were succeeded by some coarse râles.

14th January 1917.—Patient returned to general surgical ward free from any signs of infection of the skin, and in fairly good general condition. He still had a cough, some coarse moist sounds in the chest, and profuse muco-purulent expectoration.

20th January 1917.—Fracture of humerus soundly united in satisfactory position.

Professor Rutherford Morison saw the patient and agreed with me that he was suffering from an arteriovenous aneurysm of the external iliac artery and vein, with probable implication of the deep epigastric at its origin. The aneurysmal swelling had increased in size and his general condition improved.

2nd February 1917.—Operation performed by Professor Morison, assisted by me. The aneurysmal swelling and the external iliac artery were exposed through an oblique inguinal incision. The external iliac artery was approached extra peritoneally and a silk ligature was easily passed round it about the middle of its course. Tension on the ligature caused complete disappearance of the aneurysmal pulsation. The sac of the aneurysm which had appeared through the external abdominal ring was found to be extremely thin and closely adherent to the subcutaneous tissue of the belly wall.

During the isolation of the sac it was punctured and profuse bleeding occurred, but the aperture was promptly clamped. The common femoral artery was now exposed through the same incision, by turning down the lower flap of the inguinal incision, and a good deal of difficulty was experienced in separating the artery from the vein on account of scar tissue. The artery was tied. Then the ligature on the external iliac was also tied; both were of silk; and a further attempt was made to isolate the sac of the aneurysm. This procedure had to be abandoned, as on opening the sac terrific bleeding followed. This was controlled by finger pressure till the cavity of the sac was

plugged with gauze and the abdominal muscles stitched over the plug with catgut. The skin was sutured with catgut. "Bipp" was applied with the gauze.

*3rd February 1917.*—Patient's condition very satisfactory. The left leg quite warm, though somewhat pale. He complained of pain at the seat of operation. During the next few days he rapidly improved in condition and was able to take food with relish.

*13th February 1917.*—Wound dressed in theatre. There was a good deal of discharge mixed with "Bipp" on the dressing and the skin over the lower third of the abdominal wall was the seat of an acute dermatitis (probably due to iodoform), and the whole wound was inflamed. The gauze pack was slowly and carefully removed, and as the last inch or so was loosened, overwhelming bleeding occurred. The bleeding area was quickly compressed with a gauze pack and chloroform was administered. As soon as anaesthesia had been induced I compressed the abdominal aorta by Macewen's method and effectually controlled any bleeding. The skin was now cleansed and the cavity from which the blood issued was packed with four small sponges wrung out of turpentine, and some layers of dry gauze superimposed. The skin was dusted with starch and boric acid and a large pad of wool was fixed by a roller bandage. This controlled the bleeding effectively.

*14th February 1917.*—Patient showed no sign of anemia and only complained of pain at seat of wound. Circulation in the limb was quite good. He was troubled a good deal with cough, and the expectoration was purulent, copious, and offensive.

*16th February 1917.*—A further operation was performed by Professor Rutherford Morison. After anaesthesia had been secured, the skin of the whole abdomen was cleansed as well as circumstances would permit. The left rectus muscle was exposed close to the middle line by an incision 6 ins. long. The anterior sheath of the muscle was divided and the inner side of it exposed. The muscle was then drawn outwards and forwards and the deep epigastric artery and veins were exposed and ligatured close to the aneurysm. The abdominal cavity was then opened through the posterior sheath, and the aorta was controlled digitally by Major D'Oyly Grange's gloved hand in the abdomen. The gauze and sponges were now removed and the cavity of the aneurysm was seen to be lined throughout with lymph and some granulation tissue, except at its deeper portion, where there were two small blood clots. When the aorta was released no bleeding occurred.

The superficial part of the aneurysmal sac was excised. The abdominal wound was closed in layers with catgut and deep supporting sutures of iodine silk and the skin with silkworm gut. A portion of the vastus externus muscle was excised from the previously prepared right thigh and this, a large piece of muscle, was implanted in the cavity which formerly contained the sponges and gauze. The wound

was covered with iodoform gauze and the surrounding skin was dusted with starch and boric powder.

17th February 1917.—Patient comfortable. No constitutional disturbance of any note. Circulation in the limb good. He had little or no subsequent abdominal distress, and, following upon a good action of the bowels on the third day, he became bright and placid. The median abdominal wound healed by first intention, with the exception of a stitch abscess at the extreme and previously infected lower end. The implanted muscle, the greater part of which died, became adherent to the floor of its containing cavity, and the dead portion separated like an ordinary dry slough, leaving a healthy granulating cavity.

16th March 1917.—The cavity was lined with granulation tissue and looked clean. The condition of the limb was good; it was warm, a natural colour, and no trace of oedema. Patient could move the limb voluntarily. Passive movement was commenced at knee and light massage.

With the exception of a minute sinus exuding a drop of pus, the wound in the groin was healed by 20th April 1917.

7th May 1917.—Patient began to walk about the ward with the aid of a stick. No oedema in limb.

15th May 1917.—Patient walking about freely and had been in the garden.

2nd June 1917.—Silk ligature removed from sinus in groin.

4th June 1917.—Wound quite healed. There was no apparent difference in the limbs. The dorsalis pedis and the posterior tibial arteries could be felt pulsating apparently normally.

12th June 1917.—Blood-pressure in right leg, 180; in left leg, 92. Dorsalis pedis and posterior tibial were tested in each case. The blood-pressure in the left arm was 142, so that the physiological relationship had not been disturbed except in the case of the left leg.

I am indebted to Colonel Adams for leave to publish this case.

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## OBITUARY.

## WILLIAM HALL CALVERT, M.D.

W. H. CALVERT, who died in London on the 16th of June, was one of that great caste who in every profession, and, indeed, in all the walks in life, have displayed so much of light and leading—the sons of the manse—for he was the son of the Rev. W. Calvert, U.P. minister of North Berwick—a man of scholarly gifts and an excellent preacher, of whose pastorship there stand as enduring memorials the fine church and manse of to-day. His environment and his home influences were well fitted to develop a manly and a studious lad, and after finishing his education at one of the oldest of the public schools of Edinburgh he passed to the University for the study of medicine. He proved a distinguished student, for he gained honours in many of his classes, chiefly in those dealing with the practical side of his profession, and in 1882 he became M.B., C.M., while seven years later he obtained the higher degree. Having spent the winter of 1882 in Vienna, he entered upon the active duties of his professional life, and he was fortunate in his starting-point, for he became assistant to the late Dr. W. Murray of Galashiels, one of the best of general practitioners, who, owing to his exact knowledge of his profession, acquired quickly the self-confidence so invaluable in following it, and his confidence he communicated to his young *confère*. While thus acting he learned to love the Borderland and its kindly people, and an opportunity having offered through the retirement of Dr. Waite, he settled in Melrose. There for more than a quarter of a century he discharged the arduous, anxious, and onerous duties of a country doctor, of whom much is of necessity demanded, and by whom, when the knowledge is his, the most eminent services can be rendered, while the life is one marked by self-renunciation.

Calvert proved fully equal to all the calls made upon him, for he was thoroughly well versed in his profession. He was most conscientious in the discharge of his duties, and although temperamentally a highly strung and somewhat nervous man, he proved capable in urgent circumstances of rendering conspicuous surgical services. With these qualifications he had the happy gift of a singularly warm and sympathetic disposition, and through the exercise of them all he gained the confidence and the respect of the community, and became in it an outstanding and popular personality. The strain, however, proved too great, and in 1911, when his strength threatened to fail badly, he retired, greatly to the sorrow of his many patients and friends,



whose regret and respect were marked by a memorable public presentation. Fully alive to the fact that it is the duty of a doctor to help, through his experience and his observation, knowledge in his profession, he published several interesting articles in the *British Medical Journal*, all of which evidence true clinical acumen; and he acted for six years as Secretary to his Branch of the Association. It was not as a doctor only that the public recognised his merits; for, notwithstanding his disbelief in heredity, he had inherited the literary gifts and the logical mind of his father, and in evolution, biology, the relationship of species, and the origin and destination of man he found subjects of never-failing thought and interest.

Matthew Arnold's definition of "culture" as "a knowledge of the best that has been known and said in the world, and thus with the history of the human spirit," had in him a strong adherent, and how he followed and profited by it is illustrated by his book published in 1913, entitled *The Further Evolution of Man*, in which he deals shrewd and telling blows at the doctrines of Darwin and Malthus, and deals in a very forcible and singularly able way with many grave and important social problems; and although we cannot accept all his premises or agree in all his conclusions, there can be no doubt as to the real capacity, the true earnestness, the perfect sincerity, and the nobility of the ideals which the book displays. Between 1911 and 1914 he travelled widely in Africa and America, with great benefit to his health, and while on his homeward journey he was held up at Petrograd, the result of the breaking out of the war. This gave occasion for a very trying experience ere he reached home—an experience which was related in the pages of the *Scotsman*.

He had neither taste nor inclination to enter upon a military career, but his sense of loyalty was very deep and his patriotism ardent, and so he offered his services as a medical officer—this, notwithstanding his age and his history—and was attached as such to a service battalion of the Seaforths. Here he did well; but the strain of campaigning, even in home defence, proved too much for him, and his health again gave way. Had he followed the advice given him to retire when the signs of his malady were first observable, his life might have been prolonged; but his strong sense of Duty bade him "stick it out" until all likelihood of permanent recovery had passed. Thus he died in the service of his country, a fitting end for a man whose supreme object in life was the help and the bettering of his fellowmen, in the accomplishment of which he laid up treasure which moth or rust cannot corrupt, and which was declared in the articulated and in the outward manifestations of sorrow evoked when he was laid to rest in the scene of his earthly labours. May the earth lie lightly upon what of him was mortal, for he proved to many a sufferer a strong Rock in a weary land, and he was largely gifted with that grace of sincerity

so often commended by the Master Whose he was and Whom he served.

If far beyond the shadow of the sleep  
A place there be for souls without a stain ;  
Where peace is perfect, and delight more deep  
Than seas and skies that change and shine again,  
There, none of all unsullied souls that live  
May hold a surer station, none may lend  
More light to Hope or Memory's lamp, nor give  
More joy than Thine to those that called Thee Friend.

J. A. MACDOUGALL.

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## RECENT ADVANCES IN MEDICAL SCIENCE.

## MEDICINE.

UNDER THE CHARGE OF

W. T. RITCHIE, M.D., EDWIN MATTHEW, M.D., J. D. COMRIE, M.D.,  
AND A. GOODALL, M.D.ARTHRITIS DEFORMANS AS AN INFECTIOUS DISEASE:  
AN EXPERIMENTAL AND CLINICAL STUDY.

NATHAN (*Journ. of Med. Res.*, May 1917) has a long and important paper suggesting, from experimental research on dogs, that the various forms of joint changes found clinically in man are the result of definite infection. He discusses, first of all, the varied pathological changes found in joints the seat of disease, and he comes to the conclusion that, with the exception of the specific changes which certain micro-organisms induce wherever they become localised (tubercle bacilli and spirochetes), all the morbid changes found in joint disease can be ascribed to variations of an inflammatory process. The variations are due to variations in location and the intensity, duration, and termination of the inflammatory process and the stage in which the structures are examined. To establish this hypothesis Nathan undertook certain experiments in dogs—12 in number. He injected them with a hæmolytic streptococcus, killed them at intervals from the third to the ninetieth day, and microscopically examined all the large joints with the epiphyseal ends of the bones and the spine, and so obtained a series of specimens showing all the pathological changes from the earliest period of epiphyseal infection to more or less complete epiphyseal destruction. The animals showed varied responses to the infection. Clinically the types of infection were—(1) Acute general reaction, acute joint symptoms, complete recovery; (2) acute general reaction which subsides, chronic joint conditions which may eventually subside; (3) acute general reaction, chronic and progressive joint lesions, with permanent impairment of joint function; (4) acute evanescent general reaction, no joint reactions, or a mild reaction which rapidly disappears; subsequently there is progressive deformation of the limbs; (5) cases where the general indisposition and the weakness of the limbs is progressive, leading, in 2 cases, to a mautautic condition and death. In the early stages of epiphyseal involvement there is, besides marrow changes, intra- and para-articular joint exudate, and no bacteria could be demonstrated in the joint exudate, but the streptococci were always found in the

adjoining epiphysis. The joint exudate may, therefore, be considered symptomatic, and this may account for the failure to recover organisms from joint fluid in cases of joint infection in the human subject. The mild joint swellings often found in all forms of infection—measles, scarlet fever, typhoid, and pneumonia—are undoubtedly analogous, the synovitis being due to the bacteria in the adjoining epiphysis.

He ascertained another point, viz. that the joint disease may remain active and progressive though the symptoms of general infection may have completely subsided.

He then describes fully the varied changes found in the bones at the various stages, and states that the inflammatory conditions in streptococcal infection in dogs, like the inflammatory conditions in man, are subject to great variations, due to variations in intensity, localisation, derivation of the disease, and the stage when the tissues are examined. His experiments with streptococci he repeated with pneumococci and staphylococci. Analogous changes were found in the joints.

After a very complete description and analysis of the joint changes in his experiments, he concludes that, in spite of apparent variations, the principal gross and microscopical findings in both chronic and acute joint disease are fundamentally phenomena of an inflammatory reaction. And as all pathological phenomena characteristic of so-called arthritis deformans and rheumatoid arthritis are analogous to conditions due to known infection, and can be reproduced experimentally in animals, it must be assumed that all forms of morbid influence induce fundamentally the same changes in joint structures or that these conditions are due to infection. So that all forms of arthritis are the result of inflammation of infectious origin. They may be divided into acute and chronic, or, according to pathological lesions, into acute inflammations and proliferations and degenerations, and, according to localisation of the disease, into osseous and subperiosteal or synovial forms of disease. In man the local clinical phenomena correspond in many respects to those of experimental joint disease in animals, though certain phenomena present in human arthritis cannot be associated with the conditions found in experimental arthritis. He did not find it possible to reproduce in animals the forms of arthritis which apparently invade first of all the peripheral joints and then gradually spread to the proximal. But this is because in man the movements of the hands and fingers are finely adjusted and constantly employed. In animals hands are lacking, and, in addition, he considers that, though the changes are most conspicuous in the hands, the disease has actually invaded other joints simultaneously. Nathan then discusses the peculiarities characteristic of arthritis deformans which do not apparently bear out their infective origin. These are the deformities, weakness, and spasm. These are, in all probability, due to a coincident



spondylitis and secondary involvement of the cord or spinal roots, and the deformities indicate a more or less localised peripheral neuritis of the ulnar, radial, or median nerves, the appearances varying with the nerve involved. The central neural involvement also explains the changes in the skin—glossiness, ulceration of the skin and nails, oedemas, and anomalies of sweat secretion. In his experiments on dogs, Nathan was able to demonstrate the involvement of the central and peripheral nerves. In the human subject the exact nature of the infection is doubtful, though in most cases it is probably a streptococcus; but, as he has shown in his experiments, other organisms may produce arthritis. He recommends thymus extract as treatment in cases of arthritis. If arthritis is an infection, thymus extract cannot be a specific, but it has a very beneficial effect on nutrition, and he finds that in those cases in which the joints are not ankylosed, if the treatment be kept up for some time, it nearly always leads to complete recovery.

#### AUSCULTATORY BLOOD-PRESSURE DETERMINATION—A SOURCE OF POSSIBLE ERROR.

Cook and Jerome (*Journ. Amer. Med. Assoc.*, 14th April 1917) discuss a possible error in the estimation of blood-pressure by the auscultatory method. In taking blood-pressure, when the pressure in the armlet is greater than the systolic pressure, and then when the air in the armlet is gradually released various sounds are heard on auscultating over the brachial artery at the bend of the elbow—(1) A sharp tapping sound, which records the systolic blood-pressure; (2) as the pressure falls this sound becomes a loud hum; followed by (3) a sharp tapping; and (4) a soft muffled sound. The authors found that in 5 per cent. of cases of hypertension the humming sound of the 2nd phase may be feeble, or there may be complete silence. If not observed this may lead to an error, for, as the usual method of ascertaining the systolic pressure is by raising the pressure quickly until all sounds have stopped, the end of the tapping indicating phase (3) will be taken as the systolic pressure, as no further sound is heard, and a 50 per cent. error may be made. A moderate systolic pressure would be recorded instead of hypertension. To avoid this error they suggest that in cases of hypertension a preliminary approximate estimate should be made by the finger on the radial pulse method and then determining the pressure by auscultation.

They suggest that this phenomenon in hypertension may have some relation to the thickness of the arterial wall. Erlanger has suggested another explanation. He points out that it is possible to arrange a compression chamber and stethoscope on the femoral artery of the dog so that the Korotkoff sounds can be followed as in man. If the artery

below the stethoscope be temporarily occluded while the compressing pressure is at the 1st and 2nd phases, it is found that these sounds become fainter and may disappear. This disappearance of sound is due to the forcing open of the lower end of the compressed artery by the blood which accumulates in the blind end. The disappearance does not happen if the compression is made during the 3rd and 4th phases.

#### LUMBAR PUNCTURE FOR THE RELIEF OF DELIRIUM IN LOBAR PNEUMONIA.

Musser and Hafford (*Journ. Amer. Med. Assoc.*, 28th April 1917) draw attention to the success obtained by lumbar puncture for the relief of delirium in pneumonia. They point out that delirium is fairly common in pneumonia, and for two reasons it is bad—it indicates a severe toxæmia, and it rapidly wears out the patient through severe muscular exertion, and so throws a great strain on the heart. The usual remedies—bromides, chloral, morphine, etc., are depressant: the use of lumbar puncture for this condition was suggested by the beneficial results obtained in delirium tremens. In both, in the course of the disease, there comes a marked increase in intraspinal tension. Lumbar puncture promptly relieves this tension, and, in addition, withdraws a certain amount of toxic substances. They describe their results in seven cases where lumbar puncture promptly relieved the delirium. The fluid in all cases was under pressure. No definite amount was withdrawn, the needle being withdrawn when the rate of flow was normal.

#### DIABETES INNOCENS.

Graham (*Quart. Journ. of Med.*, April 1917) records the results of his investigations in the condition known as diabetes innocens. He points out that cases had previously been described by Salomon and others which, with sugar in the urine and occurring in relatively young people, had a different course to that of diabetes mellitus. These cases Salomon called diabetes innocens. They are characterised by the presence of a very small amount of sugar—less than 10 grms. per day—and by the fact that the amount of sugar passed has no relation to the amount of sugar taken—a dose of 100 grms. resulting in the excretion of from 2 to 10 grms. of sugar. The cases have no symptomatology and are non-progressive. Graham describes his investigations in five cases, and points out that, though cases 1 and 2 correspond to the description given of diabetes innocens, there are others—cases 3, 4, and 5 in his series—which do not quite belong to the same class. In these latter cases the amount of sugar passed is greater than 10 grms.—20 to 50 grms. Again, the percentage of sugar passed

in the urine may be as high as 5 instead of 1, as in true diabetes innocens.

The amount of sugar excreted in the urine is not independent of the amount of sugar eaten, 7 to 17 per cent. being excreted instead of 5 per cent. The level of the blood sugar also is altered by a dose of sugar. Graham thinks cases 3, 4, and 5 form a definite clinical group. In diabetes innocens the presence of sugar in the urine is due to increased excretion on the part of the kidney, while in this new group of cases there must be in addition a diminished carbohydrate tolerance. In these cases a diagnosis can only be made by a sugar test, starting with 10 grms. and increasing to 25, 50, and 100 grms., and by an estimation of blood sugar. The prognosis, he thinks, one may look upon as good in such cases. As regards treatment, the question arises as to whether a carbohydrate-free diet is necessary, and Graham thinks it wiser after diagnosis to give such a diet for some months, and if, at the end of that time, the sugar remains as before, the diet may be relaxed—no sugar, however, being given.

He concludes—

1. An innocent type of glycosuria occurs which is not associated with renal disease.

2. There are at least two types of this disease—

- (a) Where the output of sugar is very small and is not appreciably altered by a dose of sugar.

- (b) Where the output of sugar is rather greater and is increased to a certain extent by a dose of sugar; the level of the blood sugar is also appreciably altered by the dose of sugar.

3. The relation of the amount of sugar excreted and of the amount of sugar in the blood suggests that the sugar is actively excreted by the kidney.

4. The prognosis is good.

5. The diagnosis should only be made after careful sugar tests.

#### THE ABSOLUTE DETERMINATION OF INTRACRANIAL PRESSURE.

Landon (*Journ. Amer. Med. Assoc.*, 26th May 1917) enters a plea for the importance of actual estimations of cerebro-spinal pressure in view of the frequency with which lumbar puncture is now employed for diagnosis and treatment. The actual pressure of the cerebro-spinal fluid can only be made by a manometer which shall give accurate results. Attempts have previously been made to estimate the average normal pressure, but so various figures have been recorded—40 to 160 mm. of water as a minimum, and 60 to 200 mm. as a maximum—that it is unlikely that such wide degrees can be accurate. Landon has invented and worked out a simple instrument for practical use. His instrument is a mercurial manometer, and he employs an iridio-

platinum needle of No. 12 wire gauge. The details of the instrument and its use will be found fully described in his paper. All estimations of cerebro-spinal pressure should be made with patients in the same position, viz. with the cerebro-spinal axis as nearly as possible horizontal with the bed or table, otherwise readings will vary. It is not necessary actually to withdraw fluid to ascertain the pressure. He finds, after many observations, that normal intracranial pressure varies from 6 to 10 mm.; Hg, average 8 mm. Readings over 12 mm. are suspicious of increased tension, and there may be increases up to 70 mm., *e.g.* in tuberculous meningitis. He points out various conditions in which this exact estimation of intraspinal pressure is useful and a reliable guide to treatment. In cranial traumatism one is guided as to treatment by manometric readings, and in suspected intracranial tumours they are especially indicated, as increased tension is present long before intra-ocular symptoms appear. In the delirium of infectious fevers, in delirium tremens, in puerperal eclampsia, and in carbon monoxid poisoning the cerebro-spinal fluid is under tension, and its correct estimation gives a guide and help to necessary procedure.

E. M.

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## SURGERY.

UNDER THE CHARGE OF

J. W. STRUTHERS, F.R.C.S., D. P. D. WILKIE, F.R.C.S.,  
AND JAMES M. GRAHAM, F.R.C.S.

### THE EMBRYOLOGY AND SURGERY OF DOUBLE URETER AND KIDNEY.

YOUNG and Davis (*Johns Hopkins Hosp. Bull.*, May 1917) record an interesting case of double kidney and ureter, the upper half of which was calculous and pyonephrotic. The left kidney was affected, and the condition was diagnosed by means of pyelography. The diseased portion was successfully removed at operation, the lower normal portion of the kidney being left behind with an undisturbed blood-supply and intact ureter. The pyelogram showed on the left side a double renal pelvis, with bifurcation of the ureter at the level of the third lumbar vertebra. A large branching calculus filled the upper pelvis. At the operation a slight furrow was formed, demarcating the two kidney segments, and, at this level, it was possible to resect the upper portion. The bleeding was moderate in amount and controlled by mattress sutures through the upper part of the normal portion. The patient's symptoms were completely relieved, and it was later shown that the portion of the left kidney remaining secreted normal urine. This case is the first of its kind to be fully reported in the literature.



It is believed that a bifid ureter may be accounted for by a premature or exaggerated bifurcation of the tip of the ureteral bud. If the normal bifurcation or splitting of the primitive pelvis should be excessive, and extend down the ureteral stalk, two separate pelves and a bifid ureter will result.

Felix designates such forms of ureter as "cleft ureter," reserving the term "double ureter" for those that have separate openings in the bladder. A survey of the literature shows that ureteral duplication is surprisingly common, especially in post-mortem records, and occurs more frequently than all the other forms of gross renal anomaly taken together. In surgical literature, however, reports of bifid ureter and double kidney are rare, and the condition has only been diagnosed prior to operation on two occasions. The operative treatment has usually been complete nephrectomy. The authors conclude that, with the help of ureteral catheterisation, radiography, and pyelography, the diagnosis of such cases will be much easier in the future, and that when the disease is confined to one-half of the kidney a partial nephrectomy should be performed.

#### THE EFFECT OF REMOVAL OF THE GALL-BLADDER.

Judd and Mann (*Surg., Gynec., and Obstet.*, April 1917) have studied experimentally the effects of removal of the gall-bladder. Their experiments confirm the discovery by Oddi, in 1887, of a special sphincter, composed of non-striped muscle fibres, which controls the duodenal end of the common bile duct. Hendrickson has further demonstrated that a separate sphincter exists at the orifice of the common duct in man as well as in dogs and rabbits. It is possible that contracture of this sphincter may play a part in the etiology of pancreatitis by producing an obstruction to the outflow of bile, and by favouring entrance of bile into the ducts of the pancreas.

After cholecystectomy there is a gradual increase of pressure in the ducts, which first causes dilatation, till eventually the sphincter is overcome and bile finally flows almost continuously into the duodenum; the pressure in the bile ducts will then become practically nil. This observation possibly explains a clinical fact which the authors believe to be true—namely, that cholecystectomy in many cases will cure pancreatitis.

All the extrahepatic ducts dilate after cholecystectomy, but no dilatation was found in the ducts within the liver substance, and the intramural portion of the common duct dilates less than the rest of the duct. The greatest dilatation occurs at the junction of the hepatic ducts. In general, dilatation of the biliary tract in cats and dogs occurred within sixty days of the removal of the gall-bladder.

That the dilatation of the ducts after cholecystectomy is due to the

action of the sphincter of the common duct was proved by experiments in which the action of the sphincter was destroyed by division of the orifice of the common duct, or by dissecting the termination of the duct free from muscle fibres as it passes through the duodenum; if this is done at the same time as the gall-bladder is removed the biliary ducts fail to dilate.

Normally the liver secretes bile constantly, but, owing to the action of the sphincter of Oddi, it is not passed into the intestine at the same rate; the excess of bile collects in the gall-bladder. After cholecystectomy the sphincter attempts to maintain this difference between the rate of secretion and the rate of discharge, with the result that bile collects and the ducts dilate. The process of dilatation continues till the ducts contain as much bile as the gall-bladder, or, more often, till the sphincter itself becomes dilated, and thereafter the pressure within the extrahepatic ducts becomes greatly diminished.

#### INFECTION OF SIMPLE CLOSED FRACTURES.

In an experience of twenty years Blake (*Boston Med. and Surg. Journ.*, 3rd May 1917) has seen twelve cases of infection of simple closed fractures. In these cases the infection was comparable, both in intensity and duration, to that which is still too common in compound fractures. The etiological factor in this condition is the entrance of organisms, either through a scratch or a hair follicle, but rarely through the circulatory blood, as occurs in acute osteomyelitis in the young after slight forms of trauma. Almost all of the patients were of the labouring class. The fact that the general resistance of these patients is often diminished by hard work, age, alcohol, and other bad habits, and that the skin over the site of fracture is often very dirty, combine to produce the conditions essential to infection. The bruising of muscle is probably an important factor in producing a favourable medium for bacteria, which may penetrate the skin. The treatment is preventive, and more than usual care should be taken in cleansing the skin and in the treatment of blisters. When suppuration is evident incision and drainage are indicated.

Occasionally suppuration has been found in the course of late operations for simple fractures, and it is possible that some cases of delayed union are complicated by what might be called a "silent" infection.

#### APPENDICO-CECOSTOMY IN CASES OF FULMINATING APPENDICITIS WITH PERITONITIS.

In cases of acute appendicitis with general peritonitis and marked abdominal distension Jackson (*Amer. Journ. of Surg.*, May 1917) finds it of great advantage to tie a catheter into the cecum. In such cases

there is often much vomiting and the bowels are difficult to move, the action of the heart also is frequently affected by the abdominal distension. The catheter is passed through a small stab incision in the abdominal wall and inserted into the cæcum through the stump of the appendix, to which it is fastened by a chromic catgut stitch. After invaginating the stump with a purse-string suture the same stitch is used to anchor the cæcum to the parietal peritoneum. The catheter is also fixed to the skin by a linen stitch, and is connected to an appropriate vessel at the side of the bed.

The appendico-cæcostomy permits — (1) The escape of large quantities of gas and relief from the abdominal distension. (2) The early administration of normal saline directly into the colon by the drop method. (3) A satisfactory evacuation of the bowels on the day after operation. By giving a pint of hot saline rather quickly the spasm of the ileo-cæcal sphincter seems to relax, and this is frequently followed by a copious motion. If necessary, ox-gall or other enema may be given with greater prospect of success than by the rectal method. The catheter usually remains *in situ* for a week or ten days. There is practically no leakage thereafter and the stab wound soon heals. The author has employed this method of treatment in eighteen cases, with considerable benefit.

J. M. G.

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## DISEASES OF CHILDREN.

UNDER THE CHARGE OF

W. B. DRUMMOND, F.R.C.P., AND A. DINGWALL FORDYCE, M.D.

### EXAMINATION OF THE CEREBRO-SPINAL FLUID AS AN AID TO DIAGNOSIS BETWEEN TUBERCULAR MENINGITIS AND CONDITIONS THAT SIMULATE IT.

THIS question is discussed by Golay in *Archives de Médecine des Enfants* (April 1917). Seven illustrative cases are described in detail, and the results obtained from the examination of fluid removed by lumbar puncture in fourteen cases are shown in a table. The points specially noted are the number of leucocytes per cm., the proportion of albumin, and the proportion of chlorides.

The following is a summary of the conclusions:—

1. The cytology of the cerebro-spinal fluid is of value only for the purpose of distinguishing between forms of acute meningitis in which polynuclear leucocytes predominate, and of the affections of the meninges in which lymphocytes predominate. It does not enable us, either by the number of cells present, or by the proportions of different kinds, to distinguish between tubercular meningitis on the one hand,

and, on the other, conditions which simulate tubercular meningitis or various forms of subacute and chronic meningitis.

2. The differential diagnosis between tubercular meningitis and the other affections which are accompanied by an excess of lymphocytes in the cerebro-spinal fluid must be made by chemical examination. The proportion of *albumin* and the proportion of *chlorides* are the most characteristic features and the most easy to estimate.

3. The normal proportion of *albumin* is from 0.1 to 0.2 per 1000. It is markedly increased in tubercular meningitis (1 to 2 per 1000). In other forms of meningitis with lymphocytes preponderant it does not, as a rule, attain to 1 per 1000, while in conditions which simulate meningitis, it is only from 0.1 to 0.3 per 1000.

4. The proportion of *chlorides* is of special significance. Their normal proportion is from 7.25 to 7.4 per 1000. This is markedly decreased in tubercular meningitis, and in this affection alone (5.5 to 6.5 per 1000 at the beginning, and still lower in the course of the disease). In other forms of meningitis with a preponderance of lymphocytes and in conditions which simulate meningitis the proportion of chlorides is practically normal (7 to 7.5 per 1000).

#### FEVER WITHOUT PHYSICAL SIGNS IN CHILDHOOD

is discussed by Robert Hutchison in a long article in *The Medical Review* (March 1917).

Cases of the kind are apt to be labelled "influenza," but influenza is not common in young children, and one should be particularly guarded in diagnosing it unless it is epidemic. Further, *uncomplicated* influenza does not last for more than a week, and if complications appear, physical signs appear also.

The exanthemata are excluded by the absence of a rash, and there remain for consideration—

(a) *Typhoid or Paratyphoid Fever*.—Infection with an organism of the typhoid group is common even in early childhood. The classical signs and symptoms of the disease are not always present. The disease often runs a mild course, and may not cause the patient to appear seriously ill. It is important, therefore, to be always open to the possibility of typhoid, and to have the bacteriological tests applied as soon as possible. The child is usually dull and apathetic, while a pulse-rate which is low in proportion to the temperature is characteristic in typhoid, especially as opposed to tuberculosis.

(b) *Tuberculosis* is a condition extremely difficult to exclude. The appearance of the child is often suggestive; irritability and fretfulness are usually pronounced, rapid loss of weight and a pulse out of proportion to the temperature are very suspicious, and the superficial lymph glands, especially perhaps on the inner wall of the right axilla, may be palpable.



(c) *Bacillus Coli Infections*.—The stress of such infections is specially apt to fall upon the genito-urinary system—*B. coli* pyelitis and cystitis—and in babies this may be the cause of prolonged and high fever, often attended by rigors, and without gross physical signs. The urine may contain “coliform” bacilli.

(d) *Other Infections*.—Infection with pyogenic organisms sometimes occurs within the first few days of life. In the form of septic endocarditis it may occur in later childhood when the heart valves have already been damaged by a rheumatic attack, or where there is a congenital valve deformity.

*Rheumatic* infection is extremely common in childhood, but it is not a frequent cause of *obscure* temperature, because, as a rule, arthritis advertises the nature of the trouble. Occasionally, however, the joints may not be affected. Closely allied to rheumatism is erythema nodosum, which is sometimes a cause of fever, which may be difficult to diagnose at first. Malaria should always be thought of as a possible cause of obscure fever in children who are living in, or who have recently come from, a malarious district.

(e) *Pneumonia* is frequently overlooked as a cause of fever, mainly because the physical signs are often so slight.

(f) *Blood Diseases*.—Amongst the rarer causes of obscure fever in childhood is acute leukemia. Although physical signs are usually present fairly early, yet the rise of temperature may be the first thing noticed, and it may be present for some days before anything else is detected.

(g) *Fever of Alimentary Origin* is comparatively common. Simple constipation may cause a rise of temperature, and in a few instances the pyrexia may be sustained.

In some cases of this group the fever is *recurrent*. In such children a rise of temperature occurs every few weeks or months, lasts a week or more, and then subsides. These cases seem to be closely akin to so-called “bilious attacks,” “cyclical vomiting” and “migraine,” and in some way or other due to a derangement of the liver functions.

Quite different in character, but also of alimentary origin, are instances of *extremely prolonged fever* in children the subject of mucous colitis.

(h) *Throat Infections*.—Chronic septic infection from the tonsils is not an uncommon cause of obscure fever in childhood. Some of the very prolonged cases of slight fever are of this nature.

There need not be much visibly wrong with the throat in these cases, but the tonsils are often rather ragged or embedded, and the lymphatic glands at the angles of the jaw palpable.

(i) *Infection of the Middle Ear* may cause obscure fever. The drum changes are not necessarily pronounced, and a good view of the drums is sometimes difficult to obtain in little children.

(j) *Dentition*.—It is difficult to be sure whether teething alone is ever a cause of fever, but in the case of children of unstable nervous system it may be so.

(k) *Instability of Thermodynamic Mechanism*.—In some children of nervous tendency this leads to the appearance of fever on slight provocation. If the heat centres are violently disturbed by any cause the balance of heat regulation may be deranged for a long time after, and the temperature take long to settle. This may happen to a slight degree after many kinds of febrile illness in childhood.

(l) *Unexplained Cases*.—Finally, there are cases of fever in childhood which the most thorough investigation does not explain. It is possible that some of these are due to infection by organisms not yet identified, or they may indicate invasions by the tubercle bacillus which are overcome by the protecting mechanisms before local signs have had time to develop.

#### PNEUMOCOCCIC PERITONITIS IN INFANCY AND CHILDHOOD

is the subject of a paper by Isaac A. Abt, M.D. (*New York Med. Journ.*, 28th April 1917). The chief points in the paper are the following:—

*Etiology*.—The disease represents a specific infectious process. Two groups are recognised—(1) The primary or idiopathic; (2) the secondary, in which the peritonitis is subsequent to some pre-existing pneumococcic lesion elsewhere, pleuro-pneumonia being the most common, and otitis media the next in frequency. The disease presents itself in two distinct varieties—as a localised, circumscribed abscess, and as an acute diffuse peritonitis.

Encysted or encapsulated pneumococcic peritonitis is characterised at the onset by the symptoms of acute peritonitis. This variety may begin with acute abdominal pain, vomiting, and foetid diarrhoea. During this period the symptoms are not very marked. Vomiting ceases after a few days; the fever persists, but is not high; diarrhoea continues. After ten to fourteen days the abdominal signs again increase in severity. The pain now is localised in the hypogastric region. There is progressive fulness, dullness, fluctuation; occasionally oedema of the abdominal wall, and fever. Unless the abscess formation is terminated by operation or by death, spontaneous rupture through the umbilicus may occur, or the pus may escape through the bladder or vagina. If untreated, the abscess often fills the abdominal cavity. Although in such a case the stomach resonance is not lost, the veins on the surface of the abdomen may become prominent, and the temperature slightly elevated. Diarrhoea ceases, and constipation may be present. Vomiting is uncommon at this time. As a rule, the patient wastes and becomes cachectic. During the last stages of abscess formation, before the perforation has occurred, the temperature is usually low. There is

œdema of the legs, and signs of pressure on the pelvic viscera may be manifest.

In its clinical signs, the process may simulate tuberculous peritonitis. Acute cases may be mistaken for typhoid fever, although the leucocyte count usually is high. This type frequently ends in recovery.

The primary diffuse pneumococcic peritonitis is characterised by severe and rapid prostration. The patient shows the peritoneal facies; the tongue becomes dry; there is delirium; the extremities are cold, and cyanosis is present. The temperature is often as high as 104° F.; the pulse ranges from 140 to 160. Death occurs early. Sometimes pericarditis co-exists; at other times, pneumonia or empyema. In some of the severe septicæmic types the manifestations are so obscure as to make it impossible to recognise the actual nature of the disease, or the lesions may be multiple, although it was found in a study of the recorded cases that empyema was three times as frequent as any other local manifestation.

Death may occur in twenty-four hours, or a brief period of improvement may ensue at the end of forty-eight hours, after which the symptoms increase in severity. Distension, tenderness, movable dullness, diarrhœa, slight rigidity, high leucocyte count, high fever, and profound toxæmia continue throughout the course of the process. The pain is continuous and the tenderness acute. There is no local bulging. As a rule, the abdomen is resonant and rectal tenderness is complained of. After the lapse of several days, signs of fluid in the flanks occur, with abdominal distension. The abdomen is most frequently tumid, but the rigidity is less than one would expect. As the case progresses the tenderness diminishes and the painful areas become less sensitive. Even in those cases where there is no evidence of lung involvement the patient suffering from pneumococcic peritonitis may present many symptoms suggestive of pneumonia, grunting respiration, the *ad nasi* working rapidly, and at other times herpes labialis being present. Diarrhœa sometimes is a prominent symptom.

*Prognosis.*—In the circumscribed form the prognosis is not altogether bad. The prognosis of the diffuse pneumococcic peritonitis in young infants and children is unfavourable.

*Treatment.*—If the process can be diagnosed definitely as an encysted or circumscribed peritonitis, the indication for incision and drainage is clear, even though immediate laparotomy has been advised against by Nobecourt, who thinks that the infection becomes localised more completely if a few days are allowed to elapse before laparotomy is performed. As far as the operative treatment of diffuse peritonitis is concerned, there is considerable difference of opinion, but all surgeons agree that attempts to drain successfully the whole peritoneal cavity are futile.

Gastro-intestinal infection and peritoneal absorption are combated

by gastric lavage and continuous irrigation of the bowels, as in the Murphy method.

#### CINNAMON AS A PROPHYLACTIC.

Drummond suggests (*Brit. Med. Journ.*, 9th June 1917) that cinnamon deserves a trial as a prophylactic in measles and German measles. A nurse in an institution, having taken German measles, was in close attendance on twenty young children on two days (evening and morning) after the symptoms appeared. The children received a dose of powdered cinnamon twice daily for three weeks. None developed the disease.

W. B. D.

### DERMATOLOGY.

UNDER THE CHARGE OF

R. CRANSTON LOW, M.B., F.R.C.P., AND F. GARDINER, M.D., F.R.C.S.

#### SKIN ERUPTION ASSOCIATED WITH GREAT NUMBERS OF DEMODEX FOLLICULORUM.

It has long been known that the acarus, *demodex folliculorum*, is not infrequently found in the sebaceous glands, especially in cases of acne. Lawrence (*Med. Journ. of Australia*, 30th December 1916) disputes the view that the demodex is in all cases harmless, and describes a special eruption which he attributes to its presence. The eruption occurs on the face in adults, and is impetiginous in character and associated with large numbers of the demodex. The lesions have a tendency to form rings, and the border of the skin is more definitely raised than in impetigo contagiosa. The pustulation is not so severe and the condition does not respond so readily to treatment as does impetigo. Simple scraping from the skin will reveal several of the parasites in each field of the microscope. It would be difficult to prove definitely that this parasite is or is not an accidental infection, but in support of its pathogenicity is the fact that in dogs a somewhat similar condition is well known, viz. follicular mange. This disease in dogs consists of a pustular and squamous eruption leading to great irritation, and the demodex is found in overwhelming numbers, and is generally accepted as the cause of the condition. There is also the fact that Gruby produced this condition in dogs by inoculating their skins with the demodex from human beings.

For these demodex lesions in human beings, Lawrence recommends painting with tincture of iodine after rubbing the parts with a salicylic and boracic ether lotion.



## ULTRAVIOLET RAYS IN SKIN DISEASES.

In the minds of most medical men the ultraviolet rays are associated with Finsen's method of treating lupus. That they are very useful in the treatment of many other conditions is not so well known. In the recent improvements in producing these rays so that a more intense radiation than formerly can be obtained, the long exposure, which was necessary in Finsen's time, can be reduced to a few minutes and the same result produced. Wise (*New York Med. Journ.*, 3rd February 1917) shows that, properly used, the rays may be used in many dermatological conditions where the usual remedies have failed. He does not claim that they are superior to X-rays and radium, but the risk of doing permanent injury to the skin is very much less. The type of skin disease in which they are most useful is the chronic inflammatory dermatoses. To get a satisfactory result an application sufficient to produce a good reaction is necessary. In Wise's experience anything short of that produces very little effect. Good results were obtained in angioma serpiginosum, acne, acne varioliformis, chloasma, rosacea, and seborrhoea. The chronic patches of lichen chronicus simplex, so often found on the neck and about the knees and elbows, were greatly benefited, as also were cases of chronic scaly eczema. Chronic leg ulcers can be stimulated by the rays and healing promoted. Chronic psoriasis patches also frequently improve, but this treatment is only to be recommended where other methods are not practicable or have been unsuccessful. In alopecia areata the rays may also be used to produce an erythema of the scalp and promote the growth of the hair. Wise has also used the method for treating seborrhoea of the scalp, and has succeeded in stopping the falling out of the hair which so often occurs in that condition.

## NITROGEN METABOLISM IN TWO CASES OF ECZEMA.

In former abstracts in this *Journal* the work of Schanberg and Raiziss on metabolism in psoriasis was reported. The same investigators (*Journ. of Cut. Dis.*, March 1917) have continued their researches in cases of eczema. In psoriasis it was demonstrated that there is a tendency to store up nitrogen in the body, and a low nitrogen diet had a favourable influence on the course of the eruption. The two cases of eczema examined differed both clinically and in the results obtained. The one which the authors considered a chronic eczematoid dermatitis of external origin failed to maintain a nitrogen equilibrium on a low nitrogenous diet and did not show a true retention of nitrogen. This case also failed to show any improvement on a low protein diet. The other, which was diagnosed as eczema of systemic origin, showed a true retention of nitrogen and exhibited marked improvement on

a low protein diet. The elimination of creatinin in both cases was normal, and both patients showed an increase on the elimination of uric acid. The uric acid content of the blood, however, was normal. The authors do not interpret the increased uric acid output as an indication of gout, but think that it bears some relation to the leucocytic deposits in the skin, from which there was probably some absorption. From an examination of such cases, both of which are usually classed as "eczema," it is evident that under that name two entirely different conditions were under examination. It also explains why in cases of "eczema," which are very similar clinically, dieting gives good results in some and has absolutely no effect in others.

#### TETRYL DERMATITIS.

The recent increase all over the country in the number of workers in explosives has led to a corresponding increase in cases of dermatitis, etc., due to these substances. Of these, one of the commonest is tetryl. In the January-March number of the *British Journal of Dermatology* Dr. Lucy Cripps and Dr. William L. Buxton contribute useful articles on the subject. The symptoms produced by workers in tetryl are fairly uniform, and consist of a yellow discoloration and an irritation of the skin which is exposed to tetryl dust, irritation of the nasal and pharyngeal mucous membranes, and, to some extent, of the stomach. Of these symptoms dermatitis is much the commonest; Buxton states that if no precautions were taken, 32 per cent. of the workers were affected. The distribution is more or less limited to the areas not protected by clothes during work, *i.e.* the hands, forearms, face, neck, and upper part of chest, but if the clothes were loose about the neck and chest, the body also might be affected. Tetryl is met with in four different forms—(1) ground powder; (2) very fine crystals; (3) larger crystals; and (4) granular masses. The kinds of tetryl which affect the workers most are the fine powdery form and the large moist crystals. Probably the reason for the fine powder being so irritating is that a greater amount of it gets into the air and so on to the exposed parts. The severity of the rashes produced varies with the amount and alkalinity of the sweat. Those with dry skins are less easily affected than those who perspire freely. The yellow discoloration of the skin is not permanent. Exposure to light has some effect in darkening the colour, but is not the only factor, and persons so discoloured regain their normal colour absolutely if completely removed from tetryl. Dermatitis occurs in two varieties—(1) as a rose-red inflammation affecting the skin uniformly; and (2) as a papular rash, apt to discharge sero-pus if allowed to remain untreated. Both varieties are, as a rule, preceded by itching, which in some cases is very severe. The hair generally becomes discoloured, and the loss of hair, which is often

considerable, varies directly in proportion to the sweating of the scalp. Nearly all workers suffer from sneezing, and epistaxis is not uncommon. Pharyngeal irritation is also sometimes complained of.

There are two types of respiratory symptoms—asthmatic and asphyxial—both due to irritation of the bronchi. Headache and giddiness are also sometimes produced. Gastric symptoms may also occur, but it is doubtful in many cases whether the tetryl was directly responsible. The blood shows no marked changes, but in the majority of cases there is a degree of leucocytosis. There is also a relative increase in the percentage of large lymphocytes.

The treatment is the same as for all forms of local dermatitis. The inflamed surfaces should be washed clean and in the simple cases a calamine lotion applied. A simple ointment, like ung. zinc. oleat., is also useful. If infected, the usual treatment for septic lesions should be applied.

In order to prevent dermatitis as far as possible rather elaborate precautions have to be taken. The workrooms have to be well ventilated and all loose powder on tables, etc., washed off. The worker should wear overalls which fit closely at the neck and wrists. The skin of exposed parts should be well powdered with some simple dusting powder so as to keep the skin as dry as possible. Veils to protect the face were found to obstruct the vision and were not any more efficient than powdering the skin. The hands are protected by soft wash leather gloves which fit well and reach up to the elbows. All exposed surfaces should be washed after work in hot water to which a solvent (2 per cent. ammonia) has been added. Natural immunity to tetryl does not seem to exist, and the period between "inoculation" and the onset of symptoms varies with the virulence of the powder and the precautions taken. Recurrence of the rash often occurs, so that immunity does not seem to be acquired. The most successful results were obtained where the workers were closely supervised and as soon as any symptoms appeared treatment applied. The cases where these precautions were neglected always took a very much longer time to recover.

#### THE RELATION OF LUPUS PERNIO TO THE SARCOIDS.

Lupus pernio is a chronic disease in which bluish-red lumpy lesions appear on the nose and cheeks, not infrequently also associated with swellings of the fingers and toes. The lesions on the hands and feet may be bluish-red in colour, and resemble chilblains very closely. These purple lesions also show yellowish nodules resembling tubercle nodules. The disease progresses very slowly and is benign in character, and looks, especially on the face, like a swollen lupus. Microscopically the lesions are a granuloma, with a structure very like that of tubercle.

Schaumann (*Annales de dermat. et syph.*, January 1917) gives an account of four cases, and comes to the conclusion that the condition has no relation to tuberculosis whatever, and that it is identical with the condition described as sarcoid. He found that before the skin lesions appeared there was a general enlargement of all lymphatic glands and tonsils. There is also an increase of lymphoid tissue in the bone-marrow, lungs, spleen, and liver. Many cases in addition to the nodular lupus pernio lesions show on the body or limbs areas of scaly itchy dermatitis. Schaumann's cases failed to give any reaction to tuberculin, and glands excised and inoculated into guinea-pigs failed to produce tuberculosis. The glands also do not break down and caseate as tuberculous glands do. The symptoms come and go, but tend to be worse in winter than summer. There is an increase in the large mononucleated cells of the blood, and this is influenced by the administration of arsenic. Schaumann would classify the condition among the lymphatic diseases, such as Hodgkins' disease, and considers that it has no relation whatever to tuberculosis or to any other known infection. He places it among the infectious granulomata, and suggests the name of benign lympho-granuloma as the most suitable one.

R. C. L.

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## NEW BOOKS.

*The New System of Gynaecology.* Edited by THOMAS WATTS EDEN, M.D., F.R.C.S.E., F.R.C.P., Temp. Major R.A.M.C., and CUTHBERT LOCKYER, M.D., B.S., F.R.C.S., F.R.C.P. In 3 Volumes. Vol. I., Pp. xv. + 761. Vol. II., Pp. vii. + 875. Vol. III., Pp. vii. + 871. With Numerous Illustrations in Colour and in Black and White. London: Macmillan & Co., Ltd. 1917. Price £6, 6s. net.

THIS work was originally contemplated because in the opinion of the editors the time had arrived when it was necessary to put into concrete form the great changes through which gynaecological practice in this country has passed during the last ten years. The change may be briefly summarised by saying that gynaecology has become definitely a special branch of surgery, in close touch with abdominal surgery generally, and the old view that the gynaecologist is a physician and not a surgeon is no longer tenable. In consequence of this development the interests of the gynaecologist have necessarily broadened. In order to embody these developments it was necessary to extend the scope of the system far beyond the conventional boundaries of gynaecology. The result is seen to be a work which the editors fairly claim to be the most comprehensive gynaecological treatise which has appeared in any language. Certain obstetric subjects, *e.g.* the infections and the operations on the gravid uterus, have been included, as such conditions frequently come under the care of a gynaecologist. The editors rightly insist that a practical knowledge of obstetrics forms an essential part of the training of a gynaecologist, on account of the numerous points at which they overlap, and point out that there is no doubt that gynaecology has suffered in the past from the incursions of those who are not qualified, by training, to understand its clinical problems aright.

It is impossible in a short review to do justice to this excellent publication, which reflects the highest credit on British gynaecology. The articles are all of a high standard of merit, and it is invidious to pick out any for special reference. One might perhaps criticise the inclusion of some of the general surgical conditions, such as mammary and rectal diseases, in a system of gynaecology. We note that these subjects are dealt with by general surgeons, and while hardly coming under the scope of the gynaecologist, they seem to be unnecessary in a work of this kind. It is difficult, we admit, to draw a hard-and-fast line, but if these subjects are included in gynaecology, why should not practically all abdominal conditions—gall-stones for instance—be likewise included?

Among Scottish contributors we note with satisfaction the excellent articles by Drs. Louise M'Ilroy, J. W. Ballantyne, Munro Kerr, M'Kerron, R. W. Johnstone, Teacher, and the late Scott Carmichael. The sections dealing with operative technique and gynecological operations are particularly clear and valuable. Altogether, for a complete and up-to-date exposition of gynecology, this new system can claim no rival, and is *facile princeps* the most comprehensive work on the subject we have seen. The editors are to be congratulated not only on their own contributions but on the representative contributors they have secured, who have all signally combined in making the work a success. The illustrations are of a high order and are, without exception, admirably reproduced.

With so many authors a certain amount of divergence of opinion is of course inevitable, but this by no means detracts from the value of the book; on the contrary, it adds in many ways to its interest. There is singularly little overlapping, and very few omissions of importance, so far as we have seen.

A fuller bibliography and a general index might with advantage be included in a subsequent edition.

The publishers have fully maintained their high reputation, and there is no evidence that the special difficulties which the present war conditions must have imposed on them have in any way curtailed their well-known standard of excellence.

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*The Treatment of Infected Wounds.* By A. CARREL and G. DEHELLY. Translation by HERBERT CHILD. Pp. ix. + 238. With 103 Illustrations. London: Baillière, Tindall & Cox. 1917. Price 5s. net.

WE welcome this authoritative exposition of the method of wound treatment that has come to be associated with the name of Carrel. It records a most thorough piece of research work carried out in the laboratories established at Compiègne by the Rockefeller Foundation and at the Temporary Hospital, No. 21, under the Service du Santé Militaire, under an able staff of French and American workers.

With certain matters raised in the introductory chapter we have dealt elsewhere (p. 71).

The subject-matter of the book begins with a chapter on the principles of the technique, in which the authors' method of applying the principles enunciated by Lister are explained and justified. "The idea must be grasped," they say, "that a given antiseptic substance, applied at a certain concentration, and during a certain time, is able to destroy microbes without damaging the normal tissues to any appreciable extent." This idea has been grasped, we imagine, since 1867. The authors' contribution is to define a particular anti-

septic agent, its degree of concentration, and the time during which it must be applied to effect its object. This is a solution of hypochlorite of soda, prepared after careful experimentation by Dr. Henry D. Dakin, which has been abundantly proved to possess all the qualities required of an antiseptic lotion—qualities which it shares with other allied agents.

The importance of bringing the antiseptic agent into direct contact with the micro organisms is rightly emphasised, and the means taken to ensure this is the characteristic feature of the Carrel-Dakin method of wound treatment. By a series of observations the authors have satisfied themselves that in fresh wounds the organisms are comparatively few in number, are on the surface, and are easily reached by the antiseptic agent; later, they increase enormously and penetrate more deeply, so that they are less readily attacked; that the presence of foreign bodies, necrosed tissue, blood-clots, or gauze-packing is very detrimental to sterilisation, the organisms being protected from the action of the antiseptic; and that deep and irregular wounds are much more difficult to purify than open ones. These observations, which are not strikingly original, support the practice followed by Depage and his disciples "ever since the beginning of the war," as the authors admit, of opening up wounds freely, removing foreign bodies, and excising all tissues which are likely to necrose.

The difficulty of sterilising a wound which has once been seriously infected is strikingly illustrated by one of the authors' observations. "We have examined, on a wound more than six months old, a thick cicatrix which had formed during that long period of suppuration. The different layers of the cicatrix presented a varied bacterial flora. Passing from the deepest part to the surface there was, first, a layer containing Welch's bacillus; next, a sterile layer; then a stratum containing small rod-like bodies; lastly, a layer of various cocci." Such a state of affairs explains the recrudescence of sepsis that is so liable to follow secondary operations performed even some considerable time after the original wound has healed, and should give pause to those who may be tempted to hasten matters unduly by meddling operative interference.

In a chapter devoted to the technique of the manufacture of Dakin's solution the reader will find all the details necessary for preparing the solution, and certain warnings regarding faulty methods of making and storing it.

The means of cleansing the wound is next discussed, and stress is rightly laid upon the importance of carrying this out under general anaesthesia and within as short a time as possible after the man has been injured. The pre-inflammatory period—from twelve to twenty-four hours from the infliction of the wound—is the proper time for opening up the track, excising damaged bone, and extracting foreign

bodies. When the inflammatory period has been entered upon, surgical interference should be limited to doing only what is strictly necessary, and this depends upon whether the inflammation is of the gangrenous or the phlegmonous type. During the suppurative stage, operative treatment calls for great discrimination, and "operations involving the least possible amount of traumatism should be chosen." The principles enunciated in this section are excellent, and provide a sound rational basis for the technique of sterilisation, which is fully described in Chapter IV. Much care has been exercised and considerable ingenuity expended in adapting the method to varying conditions in different classes of wounds. The authors have elaborated a system, and those who propose to adopt it must do so in its entirety. This involves devoting constant attention to each individual case, and we cannot avoid the conclusion that to this the method owes much of its success.

The authors strongly advise that the progress of disinfection should be tested by bacteriological examination of smears of the discharge, the results being indicated day by day on a chart at the bedside. Experience determines a degree of sterilisation at which it is safe to close the wound by secondary sutures or by strapping. Primary suture is never safe, and must be avoided. Secondary closure may be practised, if the wound is proved to be practically sterile, from the eighth to the twelfth day, according to circumstances. This may be effected by adhesive plaster, elastic traction, or suture.

The results of the treatment are described in the last chapter, and illustrated by a series of photographs showing the original wound and its condition after suturing. These are sufficient evidence of the efficacy of this particular method of treatment, but the claim of the authors, that "if the details of the technique or the composition of the antiseptic be modified at hazard, sterilisation of wounds becomes impossible," is too sweeping. There are other methods which, if carried out as carefully and systematically as Carrel's method, will sterilise wounds, and no one chemical solution has a monopoly in this field. In their case records the authors raise a certain confusion by the way in which they use the time-honoured term "healing by first intention." In its accepted connotation this term means healing without the occurrence of inflammation or suppuration in a wound, but the authors employ it to describe the healing of a wound which has been grossly infected, has suppurated freely, been treated by the Carrel method, and, after ten or fifteen days, has been closed by secondary suture of the granulating surfaces.

Apart from minor controversial points, this is one of the most valuable contributions to the literature of wound treatment that the war has produced.



## NEW EDITIONS.

*The Causation of Sex in Man: A New Theory of Sex Based on Clinical Materials, together with Chapters on Forecasting or Predicting the Sex of the Unborn Child and of the Determination or Production of Either Sex at Will.* By E. RUMLEY DAWSON, L.R.C.P. (Lond.), M.R.C.S.(Eng.). Second Edition. Pp. 219. With 22 Illustrations. London: H. K. Lewis & Co., Ltd. Price 7s. 6d. net.

IN this work the author expands and affirms his theory of the causation of sex. Briefly, his theory is as follows:—There are two sexes—male and female. Each sex has two sex-glands. “The sex of the foetus is *not* due to the male parent, but depends on which ovary supplied the ovum which was fertilised and so became that foetus. I find that a male foetus is due to the fertilisation of an ovum that came from the right ovary, and a female foetus is due to the fertilisation of an ovum that came from the left ovary.” The “male does not *sexify* it or cause its sex” (p. 47). “Man or the male has nothing to do with the sex of the future child” (p. 55). “The part played by man is (that of) the firelighter” (p. 58). The author further states that the ovaries ovulate alternately (p. 51), and that therefore, when he finds a male child produced, he concludes that the ovum fertilised came from the right ovary, and thus by the future alternation of ovulation he can tell the female when to have congress so as to secure a male or female infant, as she may wish. The author does not define “sex.” Sex is sex.

The great difference between male and female is that the male has his sex-gland, containing actively motile spermatozoa, developed on the Wolffian body, with certain relics of this primitive kidney utilised, and has a sex-duct—the vas deferens,—with accessory organs, which need not be enumerated, as well as certain undeveloped opposite sex-duct elements and secondary sexual characters. The female has the sex-gland or ovary developed on a Wolffian body whose relics differ from that on which the testis develops, has non-motile oocytes, and a duct system—the Müllerian—for the uterus, etc., as well as opposite sex-elements and secondary sexual characters differing from the male. Now the author holds the view, unfortunately accepted by too many observers, that the oocytes develop from the germ-epithelial cells, and thus, when logically pushed, the human female is something more than hermaphrodite, as in the right ovary she has the elements developing the male germ-cells and other accompaniments of normal male sex, and in the left ovary the same for the female sex. The spermatozoon is a mere match to light the

ovarian germinal pyre, or an enzyme to make it active. If so, how do children exhibit the heredity of the father, and how has the male gamete the same number of chromosomes as the female one? Man-kind should be made up of females. The practical equality of sexes at birth is a probability one, as in a single H.-T. tossing. In this, in, say, 100 trials, we get 50 H. and 50 T. These do not alternate, as we may have runs of heads and the same of tails. If one guessed these during the tossings, a certain number of guesses would be right and a larger number wrong: it is only the summing up of a large number of tossings that gives the equality of heads and tails. If one were asked by a wife as to the sexes of her future progeny it would be quite safe to tell her that if she had 50 children, 24 would be female and 26 male. The author thinks that the ovulating ovary should be X-rayed at the menstrual period when necessary, so as to discover which ovary is ovulating, but ignores the fact that the ovary under these circumstances does not cast a shadow to the rays; at least it has never been noted. The whole investigation is too long to criticise in detail, but it may be summed up as one of the finest examples of "clotted nonsense" ever presented to a longsuffering reader.

#### BOOKS RECEIVED.

BALLARD, E. F. An Epitome of Mental Disorders . . . . .	(J. & A. Churchill)	6s.
BEECHLEY, COMANS. Midwifery. By Ten Teachers . . . . .	(Edward Arnold)	18s.
BRADY, U. Kala-Azar: Its Treatment . . . . .	(Batterworth & Co.)	8s. 6d.
CARRUT, A., and G. DUFFLEY. The Treatment of Infected Wounds . . . . .	(Baillière, Tindall & Cox)	7s.
COLLIE, SIR JOHN. Malingerism. Second Edition . . . . .	(Edward Arnold)	16s.
DARLING, H. C. R. Surgical Nursing and After-Treatment . . . . .	(J. & A. Churchill)	8s. 6d.
HAYES, R. The Intensive Treatment of Syphilis and Locomotor Ataxia by Aachen Methods. Second Edition . . . . .	(Baillière, Tindall & Cox)	3s. 6d.
KIRKPATRICK, R. The Biology of Waterworks . . . . .	(British Museum, Economic Series, No. 7)	1s.
LEVTON, O. Treatment of Diabetes Mellitus by Alimentary Rest (the "Allen" Treatment) . . . . .	(Allred & Saunders, West Norwood, Ltd.)	3s.
MULDOON, H. C. Lessons in Pharmaceutical Latin and Prescription Writing and Interpretation . . . . .	(Wiley & Sons)	6s.
NICOLL, M. Dream Psychology . . . . .	(Frederic, Hodder & Stoughton)	6s.
Recalled to Life, No. 1 . . . . .	(Hale, Sons & Danielsson, Ltd.)	2s.
ROBERTSON, N. The Treatment of Tuberculosis by Means of Spengler's Immune Bodies . . . . .	(Baillière, Tindall & Cox)	7s.
SLOAN, S. Electro-Therapy in Gynecology . . . . .	(Wm. Heinemann)	12s. 6d.
SMITH, G. E., and T. H. PEAR. Shell Shock and its Lessons . . . . .	(Longmans, Green & Co.)	2s. 6d.
STEELE, M. A Laboratory Manual of Organic Chemistry . . . . .	(Wiley & Sons)	6s.

# EDINBURGH MEDICAL JOURNAL.

## ON THE TREATMENT OF THE TOXÆMIA OF COMMON INFECTIONS IN CHILDREN BY INTRAVENOUS INJECTION OF EUSOL.

By J. LORRAIN SMITH, M.D., F.R.S., Professor of Pathology, Edinburgh University; JAMES RITCHIE, M.D., Professor of Bacteriology, Edinburgh University; and THEODORE RETTIE, D.Sc., Research Assistant under the Medical Research Committee.

*(Report to the Medical Research Committee.)*

IN a general investigation on the antiseptic action of hypochlorous acid we were able to show that the solution known as eusol, in which free hypochlorous acid is balanced against calcium baborate, can be applied without difficulty in the treatment of septic wounds, and, in particular, that no toxic or irritating effects resulted when it was freely applied to extensive raw surfaces or cavities.<sup>1, 2</sup> The application of eusol to the treatment of toxæmia by intravenous injection was part of this inquiry. For intravenous injection we have recommended the use of standard eusol, 1 c.c. of which is equivalent to 1 c.c.  $\frac{1}{16}$  normal sodium arsenite solution. The preparation and standardising of eusol is described in detail in the appendix.

By means of experiments on rabbits we have demonstrated that considerable quantities of eusol can be safely injected into the blood-stream. In applying this method it is essential to note that a simple aqueous solution of hypochlorous acid cannot be injected into the blood because of its acidity, due to spontaneous decomposition. It is practically impossible to prepare at normal temperature a solution of hypochlorous acid which does not contain free chloric acid. The baborate of calcium which is present in eusol neutralises the strong acid but leaves the weak hypochlorous acid free; the solution reacts alkaline to litmus.

We found that a rabbit of 2 kilos. weight could tolerate as much as 25 c.c. of eusol slowly injected into the ear vein. In some cases we were able to administer even larger doses; but, as a

rule, the amount which could be injected with safety was 10 to 15 c.c. per 1000 grms. weight. When we consider that a rabbit weighing 2 kilos. has about 100 c.c. of blood in its circulation, it becomes clear that there is ample room for applying the method to septic conditions of the blood in the human subject.

At this point of our inquiry Sir Halliday Croom asked us to apply the method to a case of puerperal septicaemia which he regarded as hopeless. Under this treatment the patient recovered; eleven days later she developed symptoms of parametritis, but this subsided under local treatment, and she was at length able to return home with her baby. There seemed to us no reason to doubt that the recovery from the septicaemia which threatened her life was due to the injection.<sup>3</sup>

Soon after this Captains Fraser and Bates applied the method to the treatment of toxæmia from gas gangrene. They were able to show that in this condition remarkable benefit followed the injection of eusol in moderate doses of 40 to 70 c.c.<sup>4</sup>

Later, Drs. Brand and Keith published an account of a case of puerperal septicaemia in which they ascribed the recovery of the patient to treatment by intravenous injection of eusol.<sup>5</sup>

Further evidence of the same kind has reached us from other observers regarding cases of sepsis in which the general symptoms of toxæmia have subsided after the intravenous injection of eusol.<sup>6, 7, 8</sup>

The general conclusion from these cases is that at a certain stage of the generalising from an infected wound or other local focus of what is ordinarily denominated sepsis the introduction of eusol into the blood is beneficial to the patient and the progress of the sepsis becomes arrested. On the other hand, in cases where the condition has reached a stage which is properly described as pyæmia, in which multiple foci are being or have been established, or in those in which a severe or long-continued toxæmia has lowered the resistance of the patient, the benefit which follows the injection of eusol may be insufficient to arrest the septic process.

We experienced this difficulty in the treatment of two cases of ulcerative endocarditis; in a case of puerperal pyæmia with multiple foci in spleen, kidney, and brain; and in a case of osteomyelitis. In each instance there was benefit from the injection of eusol, but this was not maintained, and the sepsis was not arrested. While the problem has already been roughly defined we are pursuing further investigations to determine more exactly the point in the



development of septic infection beyond which the injection of eusol proves insufficient.

In the observations recorded in the present paper we have applied the method to the treatment of the toxæmia which formed a part of the symptoms of ordinary bacterial infections among children who were inmates of the Royal Hospital for Sick Children, Edinburgh. The patients to whom the treatment was applied were suffering from broncho-pneumonia, empyema, etc., in which symptoms of toxæmia were a prominent feature. They were often critically ill, and, in general, their vitality and resistance were low.

# CASES OF INFECTION IN THE RESPIRATORY SYSTEM.

**CASE I. *Abscess of the Lung.***—Gladys W., 8 years. Admitted July 1915 to Dr. J. W. Simpson's ward. *Complaint.*—Severe cough, of three months' duration. Father has phthisis, but has not seen child for five years.

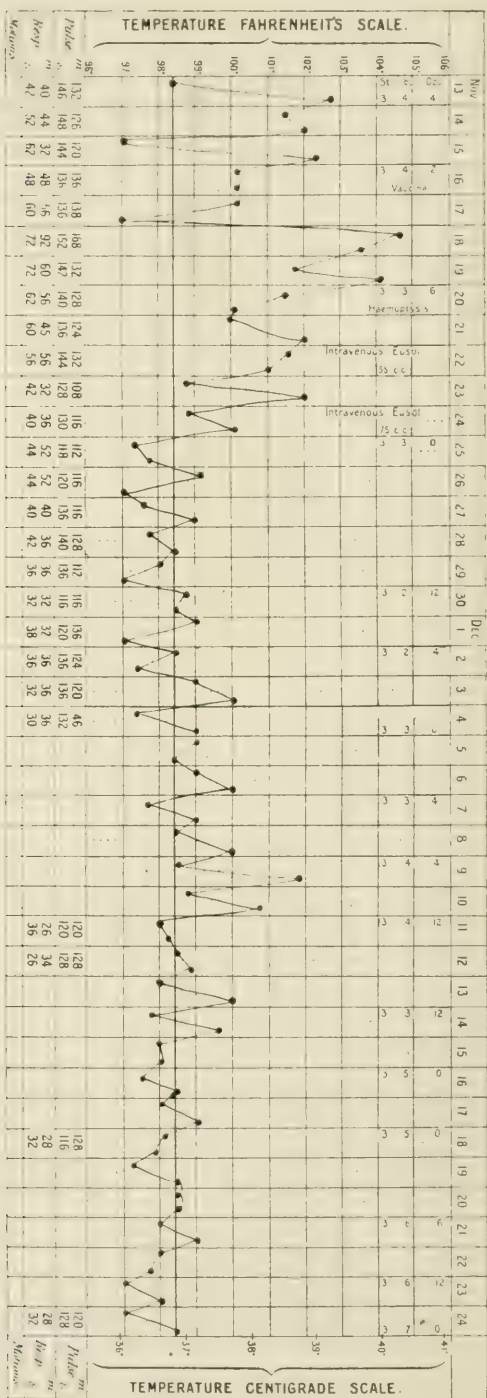
*Present Illness.*—Three months ago she complained of cough and of pain in her stomach—was out of sorts, and her temperature was high. At the end of three weeks sputum was examined but no tubercle bacilli were found. Her condition gradually improved, and at the end of three weeks she was allowed to go back to school, although her cough still continued. She was getting thinner and had night sweats. Three weeks previous to admission she was again taken to a doctor, who suggested tuberculosis: examination of sputum was negative. Before admission there had been blood in sputum, and the day previous to admission she brought up a considerable quantity of blood. Since the beginning of the year she had lost 10 lbs.; appetite quite good.

*On Admission.*—A well-nourished child; face pale and white; very intelligent; head well shaped; no discharge from eyes, nose, or ears; no enlarged glands; no evidence of tuberculosis, rickets, or syphilis. Pulse 138; respirations 40; temperature 101·8° F.

*Respiratory System.*—*Inspection.*—Nothing to note. *Palpation.*—Slightly increased vocal fremitus at right apex. *Auscultation.*—Vocal resonance slightly increased and of a different note over the right apex. Anteriorly and posteriorly high-pitched sounds and bronchial breathing. *Percussion.*—Dull over right apex.

*Blood Examination.*—Leucocytosis 34,000; polymorphs 72 per cent.; small mononuclears 26 per cent.; large mononuclears 20 per cent.

*Urinary System.*—Urine contains excess of urates; no acetone; negative diazo-reaction; no albumin, pus, or blood. Sputum showed pneumococci and streptococci; no tubercle bacilli.



*Progress.*—During the first month patient continued in the condition noted on admission, with a swinging temperature and cough, but with a good appetite. Von Pirquet reaction was negative. An X-ray photograph showed the right lung completely consolidated, with an appearance at the base suggesting disseminated tuberculosis. Exploration of the chest with a needle gave no result. On the 6th of September, after some days of higher temperature and increased cough, some ounces of mucopurulent sputum containing blood were coughed up; physical signs of a cavity supervened. No improvement followed during subsequent weeks, and on 28th October the lung was explored with a needle and pus was obtained from a puncture in the region of the right nipple. A portion of rib in this region was resected by Mr. Stiles. The abscess did not drain by this wound, which healed up. Vaccines were tried without effect. The temperature continued to swing in an irregular fashion, being sometimes below normal and rising occasionally to as high as 104° F. There was an intermittent sputum of a foul-smelling character. The urine contained acetone and indican, and patient's general condition was rapidly deteriorating.

On 22nd November 55 c.c. of *eusol* were injected intravenously. Patient experienced no discomfort. The temperature had fallen to normal by the morning of the 23rd, but rose again to 102° on the evening of that date. On the 24th 75 c.c. were injected; thereafter the temperature fell to normal. There was some diarrhoea for two days. The breath gradually lost its foul odour.

28th November.—Temperature still down; improving; feeling very well; no sputum for the last three days; breath becoming less foul daily.

6th December.—Lung is much improved; dulness diminished at back and front. *Anterior Aspect.*—Soft tubular breathing towards apex, becoming amphoric lower down; no accompaniments. *Posterior Aspect.*—Vesicular breathing, with prolonged expiration at base; higher, soft, tubular breathing; no accompaniments.

26th December.—Has been up for five days; steadily gaining weight; temperature remains normal; takes food well; lung improving; physical signs of cavity less evident. Patient continued to improve. By 6th January she had gained 6 lbs. in weight from the date of the first *eusol* injection. She was sent to the Convalescent Home at Gullane in the middle of January. She returned for examination on 14th March. Her condition was very greatly improved; no undue breathlessness on climbing stairs; expansion of chest improved; physical signs much better. There was slight dulness at right apex anteriorly and posteriorly down towards base of scapula. At base no difference on two sides. Breathing vesicular; no accompaniments; slight cough; no sputum.

*Note.*—In November the patient was suffering from toxæmia. There was one focus, the abscess of the lung, from which the toxic absorption was taking place. After the injection of eusol the temperature became normal; the local and general symptoms gradually disappeared and the body weight began to rise.

**CASE II.** *Case of Chronic Broncho-Pneumonia.*—Andrew D., 9 months. Admitted 7th March 1916 to Dr. J. S. Fowler's ward; discharged 27th March. *Complaint.*—Dwining and cough since measles three weeks ago.

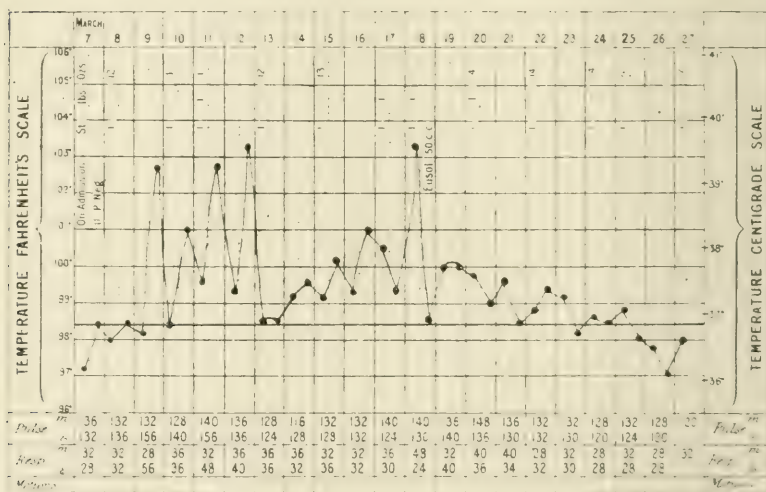


CHART 2.

CASE II.—Andrew D.

*Examination.*—Fairly well nourished; fretful; mucous membrane slightly cyanotic; left ear discharging; respirations a little rapid—32; scattered râles over the whole chest; bronchial breathing in left axilla; no dulness.

*11th March.*—Temperature up and down—maximum 103° F. Right ear discharged on 9th March. Many râles and soft tubular breathing and diminished resonance at left base as well as axilla; respirations rapid; slight cyanosis.

*18th March.*—Patient's condition not much changed; lung signs the same; weight going down. Fifty c.c. eusol intravenously—no reaction (1); no albumin or casts in the urine after this.

*20th March.*—General condition improved; scattered râles in right chest; patient brighter.



25th March.—Temperature has fallen to normal; signs in lungs clearing; no tubular breathing or dulness; many fine râles.

27th March.—Patient is distinctly improving; gaining steadily in weight since eusol was injected: sent home to return for observation in two weeks. Result—improved.

11th April.—Returned—gained 2 lbs. in weight; râles still present in lungs; general condition improving.

*Note.*—In this case the patient was not making progress and was losing weight.

After one injection of eusol improvement began and weight began to go up, and the local condition gradually improved.

CASE III. *Case of Chronic Broncho-Pneumonia.*—Mary D., aged 1 year, 3 months. Admitted 2nd June to Dr. J. S. Fowler's ward; discharged 19th June.

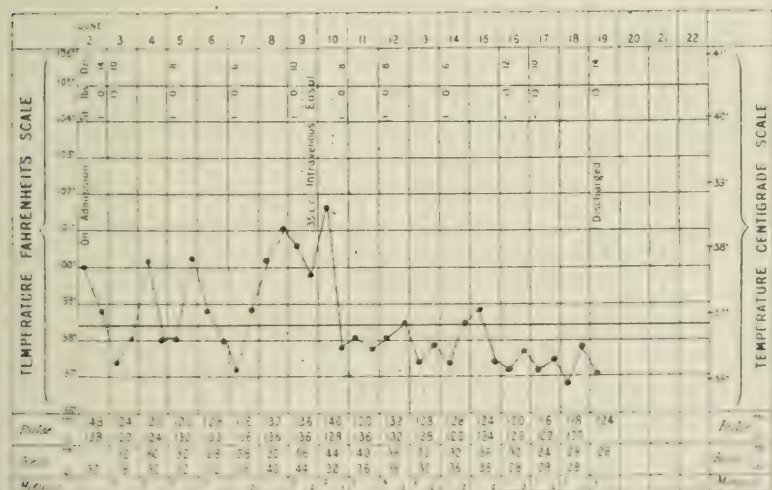


CHART 3.  
CASE III.—Mary D.

Patient suffered from chronic broncho-pneumonia. Since she had measles two months before, she had been ill with slight cough and loss of weight. For the first two weeks, after getting over the measles, there were diarrhoea and frequent vomiting, which have now stopped. She is very irritable, but usually sleeps well at night.

*State on Admission.*—Patient is a small, ill-nourished child. There are two slightly enlarged glands in the neck. Respiration rate 40.

Fine crepitations heard over the whole chest; more pronounced at the right base; no tubular breathing or dulness.

*Progress Notes*—3rd June.—No change in the patient; she takes food well. Von Pirquet negative.

6th June.—Continued rise of temperature; chest is full of moist râles, and these are marked at the right base posteriorly.

10th June.—Temperature still going up; no signs of the lungs clearing up; tubular breathing about the angle of the scapula on either side. *Thirty-five c.c. eusol were injected intravenously.*

12th June.—Temperature rose after injection of the eusol and then fell to normal, where it has remained.

19th June.—Patient has greatly improved. Lungs are now free from râles; weight going up. Discharged home.

*Note.*—This patient, though not critically ill, was not making progress. On the injection of eusol there was a reaction with a rise of temperature, but, following this, the temperature fell to normal, and thereafter the child recovered.

CASE IV. *Case of Empyema.*—Stewart S., 3 years. Admitted 14th December 1915 to Dr. J. S. Fowler's ward; discharged 2nd February

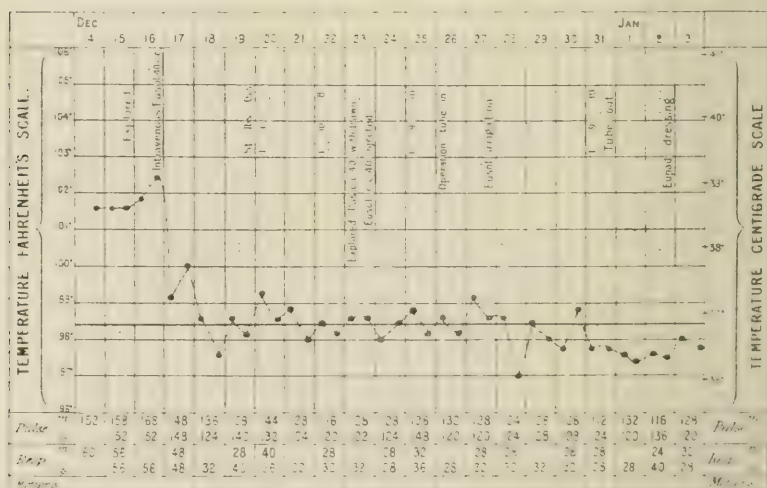


CHART 4.

CASE IV.—Stewart S.

1916. *Complaint.*—For twelve days ill with rapid respirations, vomiting, convulsions, pain in abdomen.

*Examination.*—Physical signs of right-sided empyema; temperature 102° F.; great pallor and slight cyanosis; white blood corpuscles 2000; polymorphs 80 per cent.; lymphocytes 20 per cent.; 3 c.c. thick pus aspirated from chest; no fall of temperature.

16th December.—Forty c.c. *eusol* intravenously; followed by sweating and sleeping.

17th December.—Temperature dropped to 99°. Blood—white blood corpuscles 36,000; polymorphs 85 per cent.; lymphocytes 15 per cent.

18th December.—Dulness at right base.

23rd December.—Temperature remained 99° to 98·6° F. Aspirated 40 c.c. pus. Injected 40 c.c. *eusol* into pleural cavity. Blood—white blood corpuscles 38,000.

26th December.—No improvement in child; signs of fluid in right chest, 9th rib resected; large amount of pus; pneumococcus by culture.

31st December.—Pleural cavity has been irrigated with *eusol* each day; tube taken out to-day.

6th January 1916.—Wound has been secondarily infected; still considerable pus discharge; still irrigating with *eusol*.

2nd February.—Still slight discharge; the secondary infection has hung on and the sinus very slow to heal. Patient sent home to return for dressing.

*Note.*—Pus was found in the right pleural cavity and 3 c.c. were aspirated. *Eusol* (40 c.c.) was injected intravenously and the temperature fell to normal and did not rise again; the pus continued to collect, and the pleural cavity being opened a large amount was evacuated. Thereafter progress in the closing of the wound was complicated by secondary infection, but there were no further symptoms of toxæmia. On the day following the injection a remarkable rise in the white blood corpuscles took place.

CASE V. *Case of Empyema.*—James D., 3 years, 1 month. Admitted 22nd November 1915 to Dr. John Thomson's ward. *Complaint.*—Pain in arm and chest for five days.

*Examination—Lungs.*—Consolidation; dulness; diminished and tubular breath sounds at right apex; rest of lung normal. *Heart.*—Pulmonic 2nd accentuated, and systolic murmur at base. Pulse rapid—120 to 140. *Extremities.*—Right elbow swollen, tender; local temperature. *Leucocytes.*—21,600.

*Progress.*—By 27th November elbow had recovered. Suspicion of empyema led to exploration of right chest which disclosed the presence of thin pus containing pneumococci.

3rd December.—*Operation.*—Under ether anaesthesia resection of 9th rib in posterior axillary line; 4 ozs. of thin pus obtained. Lung

seems well expanded; post-operation condition bad; pulse rapid, soft, irregular.

*4th December.*—Only small amount of pus draining. Patient very weak and ill; cannot sit up as a case of empyema usually does the day following operation.

*9th December.*—Sitting up, but is very weak; toxic.

*11th December.*—Heart not satisfactory; shows signs of dilatation. Very little discharge from wound, but no tendency to heal. Patient looks toxic; is refusing food; pulse running.

*13th December.*—Skin becoming dry and wrinkled; very weak

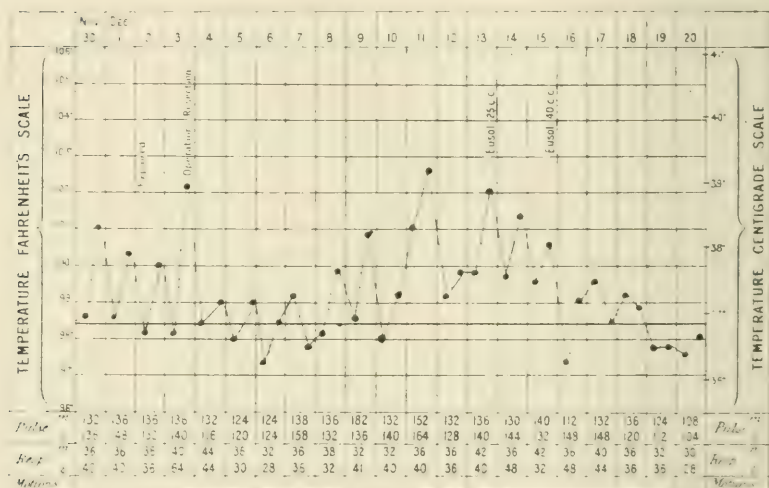


CHART 5.

CASE V.—James D.

indeed; does not notice surroundings or recognise parents. *Eusol* 25 c.c. given into vein of left arm—no after-effects. (Patient too ill to notice puncture.)

*14th December.*—This morning patient is sitting up and asking for food. This is the first time he has taken notice of anything for four days.

*15th December.*—*Eusol* 40 c.c. given into external jugular vein. Patient rather worse immediately afterwards; pulse more thready.

*18th December.*—Condition better than before *eusol*.

Blood—Hb 45 per cent.; white blood corpuscles 24,000; polymorphs 73 per cent.; small mononuclears 24 per cent.; large mononuclears 3 per cent. Considerable anisochromia and anisocytosis; few poikilocytes.



19th December.—Patient sitting up; distinctly better. During succeeding days improvement continued.

31st December.—Tube was removed; healthy granulation. Temperature remained normal.

8th January 1916.—Patient up now.

14th January.—Patient went to Convalescent Home, Gullane. No discharge from wound; lungs and heart satisfactory.

3rd March.—Patient back from Gullane. Lungs and heart normal.

27th November.—The child has continued to improve and is very well indeed.

*Note.*—The operation had apparently no immediate effect in relieving the patient, and during the succeeding ten days a progressively severe toxæmia developed, so that the patient became very critically ill.

It was at this point that eusol was administered and there was immediate benefit, which formed the starting-point of recovery.

CASE VI. *Case of Empyema.* — Eliza K., 1 year, 10 months. Admitted 20th January 1916 to Dr. John Thomson's ward. *History.*—High fever and rapid breathing for ten days, then variable temperature, cough, and loss of weight until admission. Had been ill seven weeks.

*Examination.*—Patient is toxic and looks very ill. *Respiratory System.*—Left side; hyperresonance at apex, but elsewhere dull, with absence of breath sounds. *Circulatory System.*—Heart displaced to right; sounds distant.

*Progress.*—A few hours after admission patient became cyanosed—respirations 76—and it seemed best to operate immediately.

*Operation.*—Under 1 per cent. novocain anesthesia incision made (after exploring with needle) above 9th rib in scapula line. Three ounces of thick pus removed and tube inserted. Patient apparently felt nothing.

21st January.—First day after operation patient very ill indeed,—respirations over 80; cyanosis; pulse thready; much discharge from pleural cavity; temperature still over 101° F.

22nd January.—Condition same; acute diarrhoea.

3rd February.—Patient has continued to be very ill up to the present. She takes no food; diarrhoea is better. Patient not expected to live.

Blood—Hb 65 per cent.; white blood corpuscles 26,400; polymorphs 82 per cent.; small mononuclears 12 per cent.; large mononuclears 6 per cent.

At 8.30 P.M. patient was given intravenously 25 c.c. of eusol, 0.27 per cent. solution in saline. Patient irritable at onset. As the small amount

of saline was being introduced after the eusol, heart and respirations became disturbed; stimulants were given, and after ten minutes the pulse improved but was still running. After an hour patient became noticeably better. Two and a half hours later condition was very much as before eusol was given. (Eusol was probably given too rapidly on this occasion—25 c.c. in three minutes.)

*4th February.*—Temperature rose immediately after the eusol, but was subnormal the next morning.

Condition for the next twenty-four hours seemed better. Patient reached for cup, etc., which she had not done before; looked brighter. The wound showed no tendency to heal.

*18th February.*—Patient died on this date. After the first twenty-four hours following eusol injection she gradually grew worse; eusol not repeated. Post-mortem examination not permitted.

*Note.*—One dose of eusol was injected in this case, but the injection had been given too rapidly and the patient showed signs of cardiac embarrassment immediately thereafter. This subsided, and she showed improvement for twenty-four hours, but subsequently got worse, and died fourteen days later. Eusol was not injected again.

**CASE VII. *Case of Empyema and Broncho-Pneumonia.***—Robert B., 1 year, 2 months. Admitted 31st December 1915 to Dr. J. S. Fowler's ward. Died 3rd February 1916. *Complaint.*—Weakness and cough following measles two months ago; for the last two weeks cough very severe; occasional vomiting; no diarrhoea.

*Examination.*—Very pale, emaciated child; very ill; physical signs of a left-sided empyema; exploring needle showed pus.

*Operation*—1st January 1916.—Pus obtained after resecting 9th rib; patient was very ill and looked toxic. *Thirty c.c. eusol intravenously were given (1).*

*6th January.*—Pleural cavity was irrigated with eusol for four days, tube removed on 5th day; wound looked healthy; free drainage. Temperature between 99° to 100°. Takes food well; losing weight.

*15th January.*—Very little pus drainage from wound; lung is expanding; can be felt to come down against probe when inserted. Temperature fluctuating. Left axilla is resonant; posteriorly, at angle of scapula, there is dulness—needle put in here shows no pus. Respirations are accelerated. Blood—white blood corpuscles 17,000; polymorphs 79 per cent.; lymphocytes 21 per cent.

*19th January.*—Temperature fluctuating; dulness over same area; many moist râles. *Forty-five c.c. eusol intravenously—no reaction (2).*

*20th January.*—No change in condition; lung signs the same;

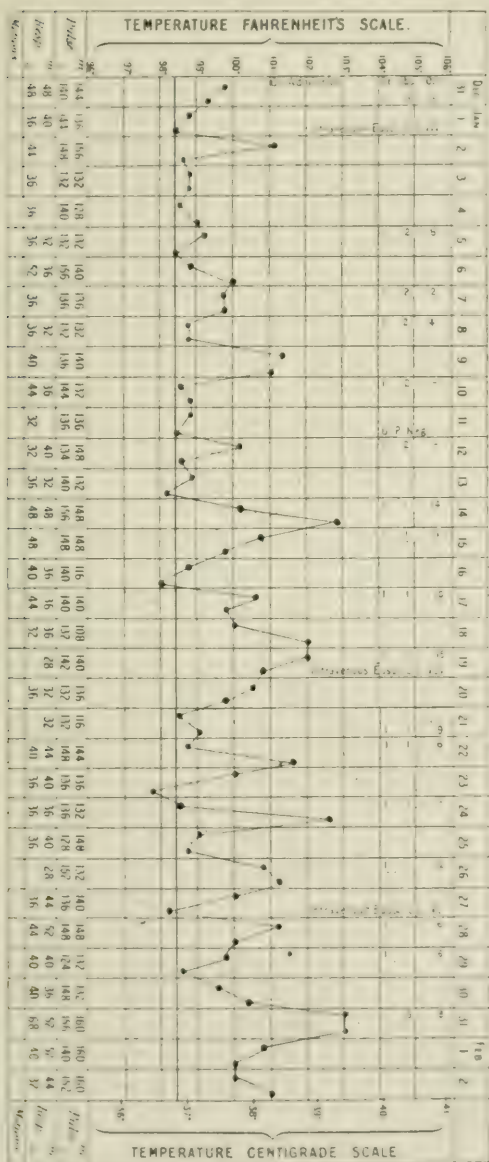


CHART 6.

CASE VII.—Robert B.

respirations and pulse about as rapid; severe paroxysmal cough. Patient rapidly losing weight; looks worse each day.

25th January.—No improvement ; loud tubular breathing and voice resonance at left base.

28th January.—Temperature fluctuating ; no change in lungs or heart ; looks weaker. *Forty c.c. eusol—no reaction* (3).

3rd February.—Since last eusol injection temperature still running 102° to 103° ; no improvement ; very weak ; marked dyspnoea ; death.

*Note.*—In this case eusol was injected on three occasions, but failed to subdue the sepsis. It may be pointed out that these cases of empyema in which the treatment failed were of considerably longer standing than the cases which improved. In Case VII. especially it was noted that no reaction followed the injections.

CASE VIII. *Case of Broncho-Pneumonia.*—Ella D., 1 year, 5 months. Admitted 4th December 1915 to Dr. J. W. Simpson's ward, for wasting, bronchitis, and diarrhoea. Patient was a rickety child, subject to bronchitis ; showing slight glandular enlargement in the neck. Ten days previously she began to suffer from diarrhoea, with frequent white stools. Cough, fever, and loss of appetite.

*On Admission.*—Child unhealthy and marasmic ; temperature 100·2 F. ; pulse 142 ; respirations 44. Undersized ; underfed ; looks ill ; nose snuffling ; no diarrhoea at present. Blood examination—hæmoglobin 90 per cent. ; leucocytes 31,000.

Von Pirquet—negative.

*Respiratory System.*—Areas of dulness all over the lungs. Auscultation—bronchial breathing, with many crepitations.

*Diagnosis.*—Broncho-pneumonia and intestinal catarrh.

*Two injections of eusol were given*—(1) 9th December, 10 c.c. of eusol were injected into the superior longitudinal sinus. Temperature fell 0·6° F. ; respirations fell from 54 to 36 ; pulse remained unaltered. (2) 10th December, 10 c.c. of blood were withdrawn from the longitudinal sinus, and 50 c.c. of eusol injected. Temperature fell from 103° to 98° ; respirations from 54 to 36.

Though the pneumonia was spreading, the general condition of the child was well maintained.

12th to 17th December.—Patient was poulticed four-hourly. Pneumonia persisted in patches throughout both lungs ; general condition improved. Temperature chart is spiky, running up to 102·5°, 103·7°, 104·2°, then dropping to normal or subnormal. Pulse varies from 120 to 160, but is strong and regular. Stools yellowish-green, slight amount of curd ; no diarrhoea or vomiting.

26th December.—Two septic spots have developed on patient's forehead. The general condition remained the same though wasting continued.



1st January 1916.—Developed purpura on abdomen and back and front of thorax. Child not so well, but still takes food.

7th January.—Looking worse. *Fifteen c.c. eusol were injected with apparent benefit.*

9th January.—*Ten c.c. eusol injected*; seemed to improve after it, but died at night.

*Note.*—Two injections of eusol were given on 9th and 10th December. These led to an immediate improvement of the pulse and respirations; but this was not maintained, and on 7th January eusol was injected again with immediate benefit, but, as before, this was only temporary. The unsatisfactory general condition of the patient proved an insuperable obstacle to the treatment.

#### CASES OF INFECTION OF THE ALIMENTARY SYSTEM.

CASE IX. *Case of Toxic Diarrhoea.*—Margaret R., 1 year, 1 month. Admitted 17th January 1916 to Dr. John Thomson's ward.

This was a case of obscure neurosis, which consisted in a failure to close the mouth in the swallowing reflex. The patient was kept under observation for some time, during which an attack of acute diarrhoea developed. The stools were white and temperature was elevated, reaching 105°; the general condition suggested toxæmia. Patient became extremely ill and pulseless, and *20 c.c. of eusol and 20 c.c. of saline were injected intravenously.* When about half had been administered the pulse returned and the patient became conscious of her surroundings. She improved steadily for three days and the diarrhoea ceased. She died suddenly on the third day, death being probably due to the neurosis, as it occurred immediately after the patient had been fed. A post-mortem examination was not allowed.

CASE X. *Case of Appendicitis.*—Alex. M., 8 years, 2 months. *Duration.*—Thirty-six hours. *Operation.*—8th December 1915, by Mr. A. P. Mitchell—laparotomy, appendectomy, and free drainage.

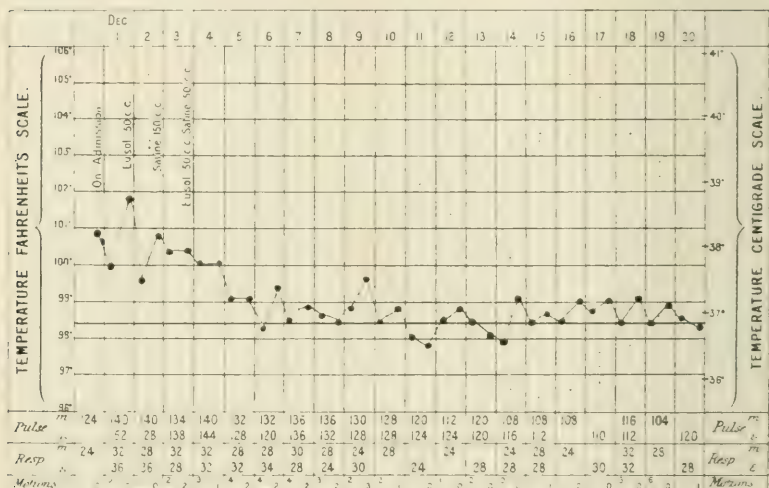
*Progress.*—9th December.—Patient had a very restless night and looks intensely ill and poisoned; semicomatose, and alternately very restless and excited. Temperature 100° F., pulse 140. 3 P.M.—Dr. Herzfeld gave an intravenous injection of eusol—50 c.c. (median cephalic vein). 7 P.M.—Temperature 101° F., and pulse 140. has slept on and off since injection, no vomiting, a little improvement in general appearance. 11 P.M.—Temperature 100° F., pulse 136; getting restless again. Heroin was given.

10th December.—Patient had a restless night after the effects of

heroin had worn off; very grey and ill to-day; pulse very small and weak. 11 A.M.—Given 150 c.c. of saline intravenously. 7 P.M.—Vomiting dirty brown matter; stomach washed out with soda bicarbonate.

11th December.—Patient had a bad night; looks desperately ill; pulse weaker, and child wastes his strength by throwing himself about. Temperature  $100.2^{\circ}$  F.; pulse 140. 12 noon.—Given 50 c.c. intravenous eusol followed by 50 c.c. of saline. 4 P.M.—Very little reaction; not quite so restless. 7 P.M.—Distinctly quieter and seems more comfortable.

12th December.—Decidedly better to-day; very weak and exhausted, but does not look so toxic.



ERRATUM—"Dec." should be "Day of Illness."

#### CHART 7.

#### CASE X.—Alex. M.

15th December.—Improvement maintained. Wound has given, and there is a slight hernia of bowel.

22nd December.—General condition now very satisfactory; child bright and happy. Thereafter an uninterrupted recovery.

11th February 1916.—Wound completely healed. Discharged to convalescent home.

*Note.*—This was a very marked case of toxæmia following gangrenous appendicitis and peritonitis. The first injection of eusol was given within twenty-four hours of the operation, soon after the toxic condition was established. The patient improved a little, but remained critically ill until after the second injection, administered forty-eight hours later.

CASE XI. *Case of Appendicitis.*—John P., 3 years. *Duration.*—One week. *Operation.*—23rd November 1915, by Mr. H. J. Stiles—laparotomy, appendectomy, drainage of abdominal cavity, and drainage of small intestine.

There was a good deal of shock, but patient revived under salines, etc. For the next three days he was very ill indeed—almost comatose; very poisoned in appearance; then he improved a little for two days. Thereafter he became gradually worse again; very restless and exhausted.

30th November.—Going downhill rapidly. *Fifty c.c. of eusol were introduced into the external jugular vein at 12 noon.*—Temperature 102° F.; pulse 172. 2 P.M.—Sleeping soundly; sweating considerably. 4 P.M.—Still sleeping; temperature 104°; pulse 200; very flushed; semi-comatose, but drinking a good deal of water. 8 P.M.—Restless again; temperature 101·6°; pulse 180; very feeble. 12 midnight.—Temperature 103·4°; pulse 192; very restless; picking at bedclothes; unconscious.

1.30 A.M., 1st December.—Death.

*Note.*—A single injection of eusol was given on the seventh day after the operation. A sound sleep and profuse sweating followed, but there was no permanent benefit.

#### CASES OF MENINGEAL INFECTION.

CASE XII. *Case of Posterior Basic Meningitis—probably Tuberculous.*—Jemima D., 3 years, 4 months. Admitted 14th December 1915 to Dr. J. S. Fowler's ward; discharged 12th January 1916. Readmitted 26th January; died 18th February. *Complaint.*—Dwining; irritable, and sleeps a good deal; occasional vomiting; diarrhoea for three days. *Duration.*—Five weeks.

*Examination.*—Slight internal squint in left eye; left base of lung, slight dulness and moist râles; knee-jerk active; no Kernig, no tache or other meningeal signs.

*Progress.*—14th December.—Lumbar puncture; pressure increased; cloudy; 1600 cells per c.mm.; globulin much increased; cells are polymorphs; Gram-positive extracellular diplococci; culture sterile.

Seventeen c.c. antimenigitis serum intraspinously.

15th December.—*Thirty c.c. eusol intracraniously—no reaction.*

16th December.—*Ten c.c. eusol intraspinously—sleepy and drowsy.*

19th December.—Temperature has fallen steadily; less sleepy; takes some notice of things about her.

22nd December.—Losing weight; appetite poor; not so irritable.

31st December.—Gaining in weight; brighter; appetite good; strabismus still present. Lumbar puncture—blood-tinged; culture negative.

4th January 1916.—Allowed up; gaining in weight; is not fretful or irritable; is very quiet; temperature remains quite normal. Discharged home.

A fortnight later patient was readmitted suffering from symptoms of tuberculosis.

7th February.—Developed signs of meningitis; irritable; slight tache; vomiting.

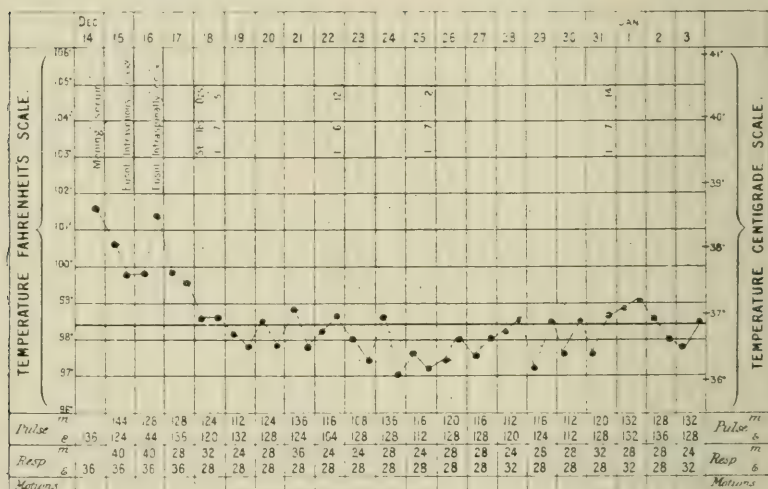


CHART 8.

CASE XII.—Jemima D.

18th February.—Signs of meningitis persisted, and patient died on 18th February.

Post-mortem showed chronic lesions in mesentery and mediastinum, with miliary tuberculosis of lungs. There was a recent meningitis but no evidence of the previous polymorphonuclear exudation.

*Note.*—Eusol was injected into the veins and also intraspinally. The temperature fell steadily and patient gradually recovered. The nature of the early meningitis was obscure, the significance of the cocci observed being indeterminable. This was followed by tuberculous infection originating in other parts of the body but becoming generalised.



CASE XIII. *Case of Posterior Basal Meningitis.*—Walter A., 1 year. Admitted 18th January 1916 to Dr. J. S. Fowler's ward; discharged 11th March 1916. *Complaint.*—For one month patient was not well; was pale, and stopped playing and walking. For two weeks he has had a stiff neck; turns his whole body about when he looks at things; is fretful, restless, and cries out at night; bowels are constipated; has flushings of face.

*Examination.*—Showed considerable stiffness of neck; resisted flexion, but moved freely from side to side; no other positive finding. Temperature 100° on admission; very fretful and irritable.

*Progress*—21st January.—X-ray cervical spine—negative.

23rd January.—Lumbar puncture—turbid fluid; increased pressure; cells are polymorphs chiefly; extracellular diplococci; culture negative.

Blood—white blood corpuscles 40,000; polymorphs 95 per cent.; lymphocytes 5 per cent.

24th January.—Thirty c.c. *eusol* intravenously into longitudinal sinus—followed by rise of temperature, 103·4°; came down to normal in twelve hours.

25th January.—Neck stiff and tender; knee-jerk very active; marked tache.

27th January.—Thirty c.c. *eusol* intravenously. Lumbar puncture—no fluid obtained; no change in symptoms.

28th January.—Lumbar puncture—polymorphs 61 per cent.; lymphocytes 39 per cent.; cloudy; few extracellular diplococci; Fehling's solution not reduced; culture shows meningococci.

29th January.—Temperature down 99 to 98°; not taking food well; lost 2 lbs. since admission; neck stiff and tender.

Blood—white blood corpuscles 18,000; hæmoglobin 75 per cent.; polymorphs 64 per cent.; lymphocytes 36 per cent.

31st January.—Neck less stiff; still very tender; marked tache.

2nd February.—Lumbar puncture—yellow clear fluid; many cells; 70 per cent. polymorphs. Gram-negative diplococci in smear and culture; Fehling's solution not reduced.

4th February.—Much brighter; smiles and plays; neck is less stiff and tender.

8th February.—Lumbar puncture—cloudy; 83 per cent. lymphocytes; no organisms in smear or culture. Temperature remains down; neck less stiff; more playful and bright; beginning to gain weight.

15th February.—Gaining in weight; no stiffness in neck. Patient is fretful and cross; very restless and sleepless at night; requires chloral to cause sleep.

Blood—white blood corpuscles 6800; small lymphocytes 60 per cent.; polymorphs 23 per cent.; large lymphocytes 17 per cent.

23rd February.—Patient continues restless and fretful; cries a great

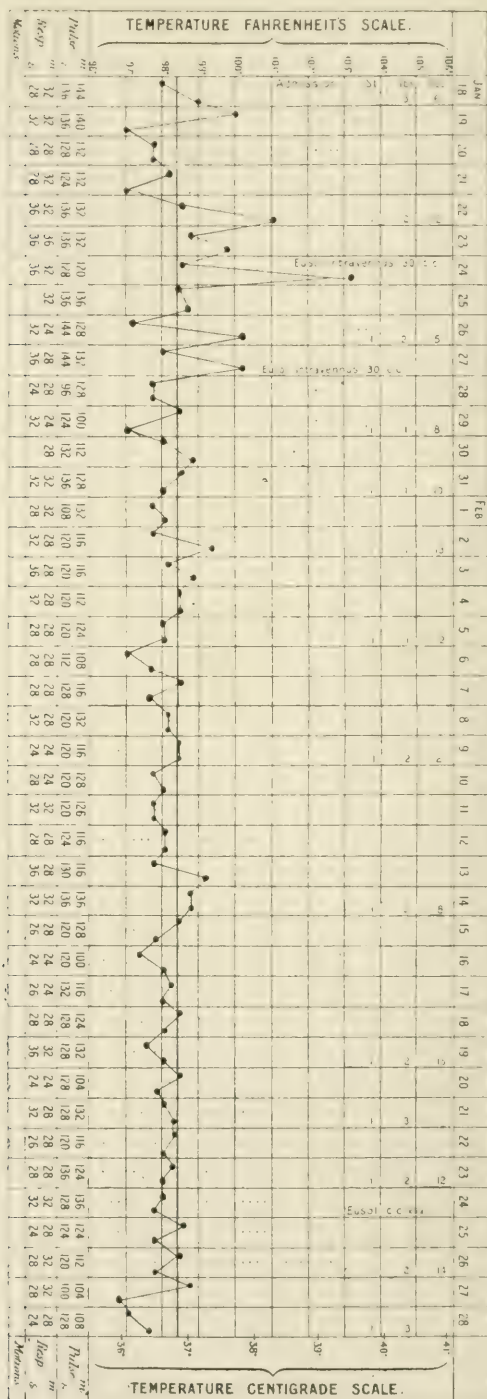


CHART 9.  
CASE XIII.—Walter A.

deal at night; does not seem happy; does not play; has lost a few ounces in weight.

*24th February.*—Thirty c.c. *eusol* intravenously.

*6th March.*—Gaining steadily in weight; still restless and wakeful.

*9th March.*—Gaining steadily; at times fretful; up, and playing in rocking-chair.

*11th March.*—Patient discharged; no meningeal symptoms; had gained up to his admission weight; sleeping better; cries very little.

*Note.*—Two injections of *eusol* were given with an interval of three days between them. After the second the temperature fell and the child slowly recovered. A third injection was given a month later, as there was again a loss of weight. After this progress was steady, and patient was discharged with no meningeal symptoms.

#### CASE OF POSTERIOR BASIC MENINGITIS WITH ARTHRITIS.

**CASE XIV.**—Andrew M., 9 years. Admitted 26th October 1915 to Dr. J. S. Fowler's ward; discharged 3rd January 1916. *Complaint.*—Pain in right elbow and discharging left ear of ten days' duration. Vomited once at onset. When admitted had a rise of temperature; was delirious, and ear was discharging blood-stained serum; ptosis of right eye; slight internal strabismus and slight lateral nystagmus; right elbow swollen, red, and tender; tenderness of mastoid on right side; physical signs otherwise negative.

*Progress.*—Mastoid operation, 28th October 1915—no pus, necrosed bone. Temperature continued high. Tenderness in left shoulder; no swelling. Blood culture—negative.

*15th November.*—Lumbar puncture—turbid fluid; intracellular Gram-negative diplococci; culture showed meningococci.

*18th November.*—Lumbar puncture—40 c.c. removed. Twenty-five c.c. Burroughs Wellcome antimeningitis serum injected into canal. Twenty-five c.c. intravenous injection of same. Right elbow still painful and slightly swollen; limitation of motion; also right hip joint tender, slight fulness over Scarpa's triangle; marked limitation of movement at hip; pain in right knee; no swelling; ptosis still present; no other eye symptoms; had lost much weight, was very thin; complaint of great pain whenever he moved in his bed; Kernig present in both legs; marked tache; knee-jerks present; otherwise physical signs negative.

*21st November.*—Twenty-five c.c. antimeningitis serum intravenously. Pain is a little less; very limited movement in hip and knee.

*22nd November.*—Fifty c.c. *eusol* intravenously—no reaction. Blood count before injection—white blood corpuscles 12,500; polymorphs

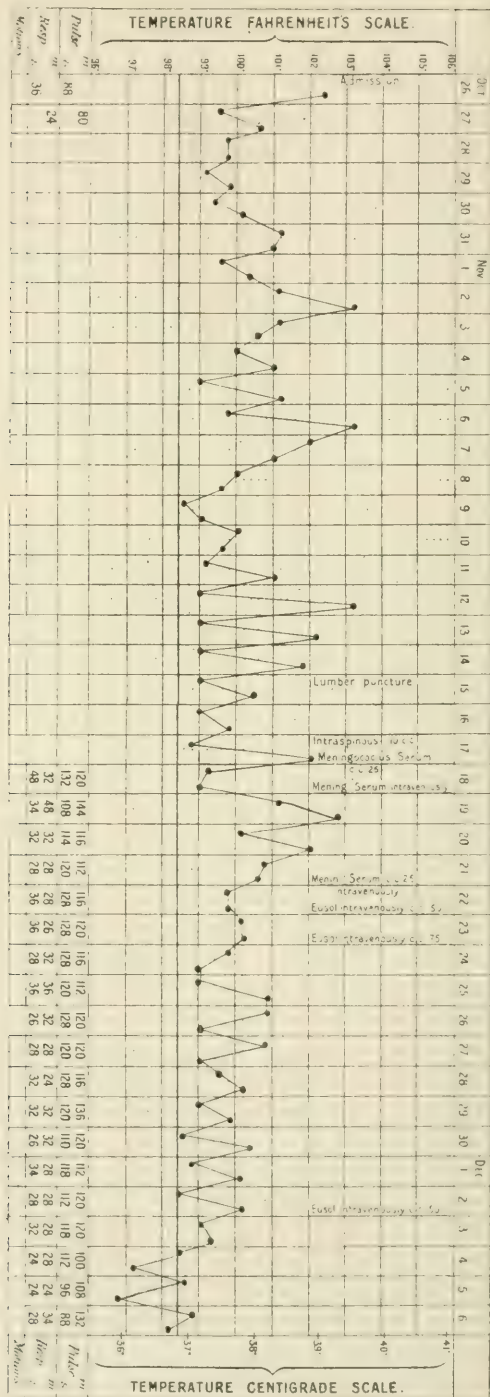


CHART 10.

Case XIV Andrew M.



78 per cent.; small lymphocytes 12 per cent.; large lymphocytes 10 per cent.

23rd November.—Blood count—white blood corpuscles 15,000; polymorphs 79 per cent.; small lymphocytes 21 per cent.

Pain and tenderness in knee, hip, and elbow about the same. Patient sleeps well with only chloral—grs. 5.

24th November.—*Seventy-five c.c. eusol intravenously—no reaction.* General condition improved; does not complain of so much pain in hip or knee.

25th November.—Pain in joints about the same; is moved in his bed with less discomfort; no increase in movements of joints.

26th November to 2nd December.—Temperature remains about the same, at lower level; pain in knee and hip much less; movements in both joints and elbow are increasing. Patient feels much brighter and happier.

2nd December.—*Fifty c.c. eusol intravenously.* Pain in right hip is greatly lessened; can move it quite freely; flexion nearly complete.

3rd December.—Blood—white blood corpuscles 13,800; polymorphs 73 per cent.; small lymphocytes 14 per cent.; large lymphocytes 13 per cent.

Moves legs freely; feels much better; ptosis still present—sometimes less marked than at others. Stood up to be weighed—3 st. 2 lbs. Wound in mastoid has been dressed with eusol; healing of ear has been very slow; cultures showed only staphylococcus. Urine up to 2nd December showed trace of albumin and no casts; now free from albumin.

10th December.—Movements in all joints free and painless; gaining weight.

13th December.—Got up.

15th December.—Walking about ward; gait is stiff and shuffling.

3rd January 1916.—Walking quite well now; sent to Convalescent Home, Gullane; weighs 3 st. 3 lbs. 8 ozs.

17th March.—Gained 6 lbs. in four weeks.

Returned from Gullane—face very fat and rosy; no evidence of ptosis; gait is normal; mastoid wound not entirely healed.

Patient attended Out-Patient Department till wound entirely healed.

*Note.*—This was a case of somewhat chronic meningococcal meningitis with a tendency to pyæmia, possibly from secondary infection. An outstanding feature was the progressive loss of weight, which, along with the temperature, suggested the existence of toxæmia. The administration of eusol influenced the resolution of the non-suppurating inflammation of joints and arrested the emaciation. The patient progressed to complete recovery.

## CASES OF RHEUMATISM AND CHOREA.

CASE XV. *Case of Acute Rheumatism following Appendicitis.*—Arnold H., 7 years. *Duration.*—Six days.

*Operation.*—3rd January 1916, performed by Mr. A. P. Mitchell—appendectomy and free drainage.

Abscess cavity rubbed out with eupal and eusol run in and left in. Early subsequent history uneventful; dressed daily with eusol and did fairly well. Two deep catgut sutures sloughed out.

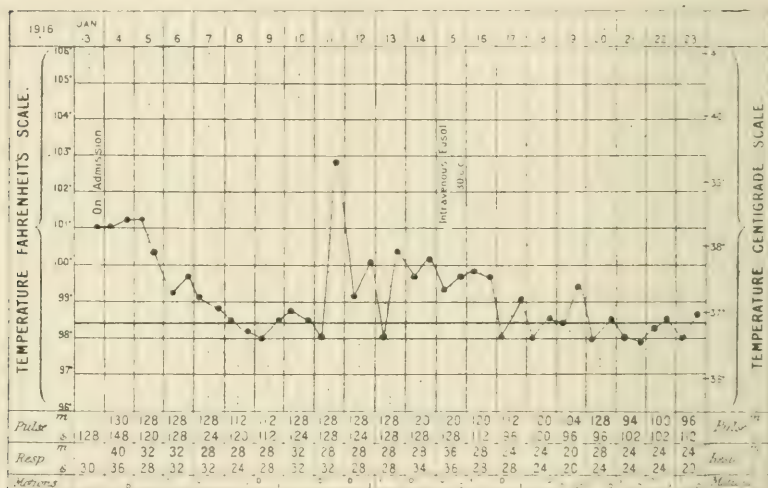


CHART 11.

CASE XV.—Arnold H.

On the ninth day after the operation there was a rise in temperature and pains in the legs, but there were no abdominal signs, and the wound was going on well. Three days later a mitral systolic murmur was detected, and the opinion was formed that an acute rheumatic endocarditis had supervened. In addition to treatment with salicylates an intravenous injection of 30 c.c. eusol was given. No very definite change followed, and the child ultimately recovered.

*Note.*—In this case one injection of eusol was given, and at the same time salicylates were administered. It is therefore not certain that the injection of eusol contributed to the recovery in this case.

CASE XVI. *Case of Acute Rheumatism*.—Alexander R., 10 years. Dr. John Thomson's ward.

Acute rheumatic fever two months before admission; mild chorea on admission. Temperature 98.8 F. Physical examination showed no joint or heart symptoms; a few rheumatic nodules.

On third day after admission patient was given 20 c.c. *eusol* intravenously—no reaction. On tenth day soft systolic murmur was heard; patient's general condition and choreic movements improving. No obvious effect of *eusol*. Ran a course of seven weeks in hospital; murmur disappearing about fifth week and nodules becoming less.

Discharged cured.

*Note*.—One injection of *eusol* was given in this case, but it had no obvious effect on the progress of the recovery.

CASE XVII. *Case of Acute Rheumatic Fever; Acute Endocarditis; Chorea*.—Nellie T., 11 years. Admitted 29th February 1916 to Dr. J. S. Fowler's ward; discharged 29th May 1916.

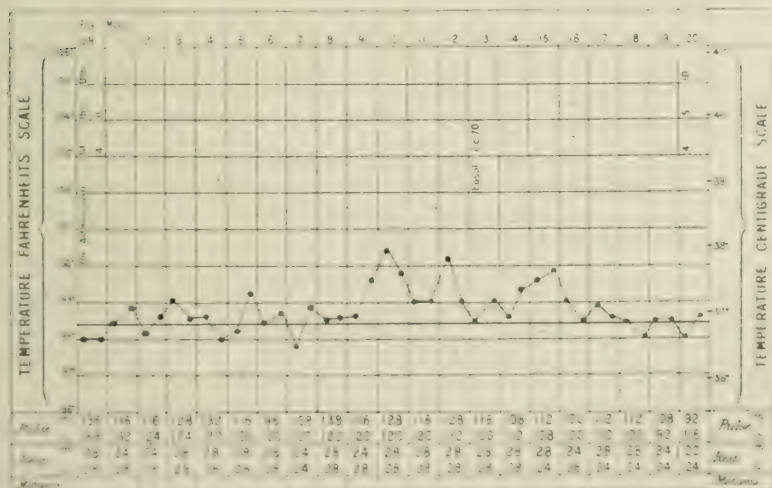


CHART 12.

CASE XVII.—Nellie T.

*History*.—Scarlet fever five weeks before admission; two weeks before admission pains in joints and swollen joints; no sore throat; one week before admission choreic movements and emotional instability.

*Examination on Admission*.—Well nourished, very restless, tossing her arms and legs about; cannot speak distinctly; cannot feed herself,

or control the movements of her tongue; throat red and granular; tonsils red and large and cryptic. Temperature 99; pulse regular—78, feeble. Heart—soft systolic murmur limited to small area inside nipple. Skin—slight rheumatic eruption on legs; no nodules; no joint involvement; urine negative.

*1st to 3th Day.*—Receiving chloretone, grs. v., off and on. Sodium salicylate, grs. x; bicarbonate, grs. xx., six-hourly. Temperature 99° to 100·4° F.; pulse 100 to 116. Heart murmur gradually increased in intensity and heard over whole precordia and transmitted to axilla; heart sounds loud, overacting. At times pulse is irregular in strength and rhythm. Choreic movements less violent, mental state is very confused, and patient has a vacant look; cannot feed herself or speak clearly.

*13th Day.*—*Eusol* given intravenously, 70 c.c., into arm vein. Temperature gradually fell. Pulse during injection fell to 60; after injection 68; no reaction.

*14th Day.*—Pulse 120; heart overacting; loud murmur; choreic movements much the same. Leucocytes 10,400; polymorphs 66 per cent.; small lymphocytes 24; large lymphocytes 10.; Hb 60 per cent.

*15th Day.*—Pulse varies—80 to 120; at times irregular; long sighing respirations. Stopped salicylates. Patient looks brighter; sleeps without drugs.

*21st Day.*—Put on Fowler's solution. For several days pulse around 88; heart action not so forcible; not irregular; less restless; face looks less vacant; speaks more clearly; murmur over precordia not so loud; no cardiac enlargement; temperature normal for several days.

*25th Day.*—Patient has been more restless; tosses her arms and legs about; put in padded bed; is much worse than on admission; cannot talk or feed herself; temperature 100·2° F.; pulse is not so rapid as before—100 and regular; does not sleep or take much food. Arsenic stopped.

*26th Day.*—Condition worse; does not sleep at all; drugs do not quiet her; warm pack did not help; has become very thin.

*27th Day.*—Nasal feed of milk and eggs and full dose brandy—5iij; fell asleep soon after; tube-feeds continued for three days. Patient steadily improved; temperature came down; movements lessened and patient seemed less confused mentally.

From this time on patient steadily improved; cardiac murmur became more faint; pulse steady—about 88; gained in weight. On 30th April no cardiac murmur present; pulse 88 and general condition good.

After three months patient was discharged; had gained in weight. In the 8th week she was up to be weighed—4 st. 3 lbs. 2 ozs.; weight at discharge, 4 st. 10 lbs. 6 ozs.



*Note.*—One injection of eusol was given only in this case, but there was no definite evidence that the treatment had contributed to the recovery.

CASE XVIII. *Case of Chorea.*—Dorothy D., 11 years, 3 months. Admitted 3rd December 1915 to Dr. John Thomson's ward. *Complaint.*—St. Vitus' dance; *Duration.*—One week.

*Clinical Notes.*—Patient was a marked case of chorea, almost maniacal; no cardiac involvement and no rheumatic history. No treatment, except rest for twelve days, and no improvement.

*Eusol, 50 c.c., into median vein on 13th day*—no reaction in temperature. Patient seemed somewhat quieter the following morning but no permanent improvement.

*Eusol, 57 c.c., on 17th day*—patient excited during the injection, and rather worse the next day. No reaction except temperature 100 F.

*Note.*—Two injections were given. No benefit resulted.

CASE XIX. *Case of Pyæmia in an Infant.*—Maria S., 1 month. Operation performed by Mr. H. J. Stiles, 2nd December 1915—arthrotomy; joint syringed out with eusol.

*5th December.*—Less swelling of knee, but there is some redness and œdema of leg below knee; acute occipital abscess incised and drained.

*7th December.*—Leg more swollen and right side of vulva is very œdematous. Right tibia opened under ether—extensive œdema present; no pus. 1.30 P.M.—*Intravenous eusol, 10 c.c., given into superior longitudinal sinus* viâ anterior fontanelle; very little reaction; temperature rose to 103.8° from 101, then settled down to 102.

*9th December.*—Fluid present in right ankle joint to-day. 3.30 P.M.—*Intravenous injection of eusol, 10 c.c., repeated*, and thereafter ankle joint was opened and drained.

*10th December.*—Another abscess on scalp incised to-day.

*11th December.*—Patient has been sinking rapidly during the last two days. Death.

*Note.*—Eusol in this case failed to control the sepsis. This has been the general result in cases with multiple foci.

#### CASES OF TUBERCULOSIS.

This group included a case of general tuberculosis in which eusol was given intravenously twice; a case of tuberculous meningitis in which one injection was given; a case of tuberculous meningitis in which three injections were given; five cases of bone

and joint tuberculosis in which eusol was given once or twice in each case. In none of the cases of tuberculosis was there any evidence of benefit.

The absence of results in cases of tuberculosis may be explained by the nature of the foci which tuberculous infection forms in the tissues.

#### DISCUSSION.

The cases now recorded are provisionally grouped according to the system affected.

Evidence of benefit has been obtained in—

(a) Cases of infection of the lungs in the form of broncho-pneumonia, empyema, abscess of the lung.

(b) Cases of infection of the alimentary system—toxic diarrhoea, toxæmia of appendicitis.

(c) Cases of chronic meningitis.

Evidence of benefit was lacking in cases of—

(a) Rheumatism and chorea.

(b) One case of pyæmia with multiple foci.

(c) Cases of tuberculosis.

While this series of cases cannot be regarded as furnishing more than indications of the type of condition in which this treatment may be applicable, it is worth while to consider various points suggested by the series.

From the experience we have had of cases generally, it is clear that the success of the application depends essentially on the reaction of the patient. The benefit of the introduction of eusol into the blood may be either direct through the destruction of circulating toxin, or it may be indirect in the sense of stimulating a protective reaction. Dean<sup>9</sup> has shown that the application to the toxin of the Shiga bacillus of dysentery of a weak solution of eusol deprives it of its toxicity, but does not deprive it of its power of producing immunity when injected. It is possible that the eusol in the blood acts on the toxin which is present and converts it into a harmless substance which still has power to produce immunity. There may, therefore, be either simple destruction of toxin which relieves the patient, or there may be indirect effects of the kind demonstrated by Dean's experiments.

Other indications of the possibility of benefit of an indirect kind are given in Dakin's<sup>10</sup> observations on the effect of intravenous injection of eusol on the antitryptic action of blood-serum.

We have from the first been carrying out experimental investigations on the effect of eusol on the blood. It is difficult,

however, to obtain in animals septic conditions similar to those met with in the human subject. This fact is all the more remarkable when we take into account that non-liability to infection by natural paths may in an animal be associated with very considerable susceptibility to artificial infection. No explanation of these phenomena has ever been advanced. It may be that the natural immunity of animals to septic infection is very high; but when a virulent microbe, which can overcome this primary immunity, is injected, the generalising of the infection is very rapid. In the human subject, on the other hand, there is frequently a long-drawn-out resistance to a gradually extending process. The injection of eusol apparently increases the value of the patient's power of resistance, and therefore contributes to his recovery.

When the patient has been ill for a considerable period, failure to benefit may arise from general exhaustion: a similar result is observed when the toxæmia is too profound before the eusol is administered. It is inevitable, in applying a new method such as this, that the cases in which it is administered at first are acutely ill. Some cases to which it was applied were regarded as hopeless, and in a number the patient was so profoundly poisoned that it was clearly too late. We have, however, included all the cases in which the treatment was conducted under our personal observation in the Children's Hospital.

It is important to note the obscurity which still remains in the definition of toxæmia, septicæmia, and pyæmia. The difficulty lies in our lack of knowledge of what indicates a septicæmia. It is easy to define it logically as a condition in which the infecting microbe flourishes in the blood. In this condition the blood has no longer power to resist the growth of the bacteria and becomes a culture medium. Such a condition of the blood is observed in a rabbit where a virulent culture of the diplococcus of pneumonia is injected. The animal dies in twenty-four hours, and its blood is swarming with diplococci, so that even the smallest drop contains them in multitudes. It is also observed in the human subject in the blood of those who die of plague in its septicæmic form.<sup>11</sup> But in ordinary micrococcal sepsis of the blood in the human subject this type of bacterial infection, except in terminal stages, is not only not the rule, but its occurrence is at least unusual. So little is it the case that it has come into practice amongst clinical observers to test the blood for the presence of septic infection of the micrococcal type by taking large quantities of

blood from a vein for the purpose. Not less than 5 c.c. of blood must be taken in order to secure a reliable observation, positive or negative. Negative results are frequently obtained in spite of this. The subject requires further investigation, but the facts, as far as they are at present known, very strongly suggest that the great majority of so-called septicæmias are essentially toxæmias, and that the presence of micrococci in the blood is not essential, and when it does occur it is often so small in amount that it can be detected only when considerable quantities of blood are taken for the test.

The further definition of septicæmia is essential for a clear understanding of the problem before us. Certain observers who have been investigating the intravenous injection of eusol have hastened to prove that the action of the acid in the blood is not germicidal. Experiments are easily devised to show that an organic fluid like the blood so lowers the antiseptic power of hypochlorous acid mixed with it that no amount which could be tolerated in the circulation could possibly kill the germs supposed to be present.

The action of organic fluids in lowering the germicidal power of hypochlorous acid was demonstrated by Andrewes and Orton<sup>12</sup> in their original investigations in 1903. It does not follow, however, that the injection of eusol is not beneficial in cases where bacteria are found in the blood. In certain cases in which the benefit of eusol injections has been observed bacteria are isolated from the blood. Such results suggest that in these cases the symptoms were essentially due to toxæmia, and that the benefit which followed was due to the action of the eusol directly or indirectly on the toxin. As the patient recovered from the toxic effects the infection of the blood disappeared with the other symptoms.

We are at present conducting an investigation on the condition of the blood in septicæmia, with a view to clearing up the obscurity of this question.

#### CONCLUSIONS.

The cases treated form a series representative of the common infections met with in the Children's Hospital. These include infections with the ordinary pyæmic organisms, the meningococcus, the tubercle bacillus, and the virus of rheumatism. No beneficial effect was produced in cases of tuberculosis or rheumatism, so that further observations are necessary in respect of these conditions.



Beneficial effect was produced in infections with the ordinary pyogenic cocci, and this was usually observed immediately after the injection. In a few cases where the nature of the infection was not determined, as in the case of toxic diarrhoea, a similar result was obtained.

When *eusol* is cautiously administered no untoward effects follow. In only one case in the series symptoms of cardiac disturbance were observed, and in this the record notes that the *eusol* was injected too rapidly.

The results recorded go to prove that in certain cases the toxic symptoms of common infections yield to this treatment no less than those following the more definite toxæmias of wound infection and gas gangrene.

We beg to express our indebtedness to our colleagues on the staff of the Royal Hospital for Sick Children for their interest and assistance in carrying out this investigation, and to the following resident physicians and surgeons who gave us invaluable help in making observations on the cases, and who were responsible for carrying out the treatment:—Edith Bronson, M.D., Johns Hopkins, B.A., Syracuse; Ann Martin, M.D., Cornell, B.S., California; Gertrude Herzfeld, M.B., Edinburgh; Miss Susan Robertson, Senior Student in Medicine.

#### APPENDIX—ON THE METHOD OF INTRAVENOUS INJECTION.

*Preparation of the Solution.*—*Eusol* for intravenous injection is prepared by shaking up 25 grms. of a mixture of equal weights of bleaching powder and boric acid with 8.5 grms. sodium chloride in one litre of water. Allow to stand for one hour or longer, then filter off the sediment. This solution contains from 0.26 to 0.33 per cent. of hypochlorous acid, according to the quality of the bleaching powder—if the latter is of B.P. standard, *i.e.* 30 per cent. "available chlorine," the *eusol* will contain 0.29 per cent. hypochlorous acid. The solution is tested by titration with  $\frac{1}{10}$  normal sodium arsenite solution, and as a minimum standard we recommend the following:—

$$1 \text{ c.c. } \textit{eusol} = 1 \text{ c.c. } \frac{N}{10} \text{ sodium arsenite.}$$

$$= 0.0035 \text{ gm. chlorine.}$$

$$= 0.0026 \text{ gm. hypochlorous acid.}$$

This corresponds to a bleaching powder of 28 per cent. "available chlorine," and is the lowest that should be accepted for intravenous injection. *Eusol* prepared from higher grade bleaching powders,

*i.e.* up to 36 per cent. "available chlorine," may safely be used. A simple method of applying the test is to mix equal quantities of eusol and sodium arsenite solution and test the mixture with potassium iodide starch test paper. If the eusol is above standard the paper will be stained blue; if there is no blue colour, add two or three drops of eusol, and if this fails to produce the colouration the bleaching powder is below strength and should be rejected.

Eusol in a cold climate will keep for a week, but under rise of temperature it rapidly decomposes. The mixture of bleaching powder and boric acid in the form of a powder may be relied on for at least a month if it be kept in a stoppered bottle in a cool dark cupboard. But as a rule it is best to keep the powders separate.

The  $\frac{1}{10}$  normal solution of sodium arsenite may be obtained from a dispensing chemist. The following are directions for preparing it, taken from *A Text-Book of Quantitative Chemical Analysis*, by Cumming and Kay, 2nd ed., p. 94.

Weigh out accurately in a small porcelain basin 1.237 grms. of pure arsenious oxide (previously dried in a desiccator). Add 10 c.c. of sodium hydroxide solution (twice normal) and warm the basin on the steam bath, stirring the mixture gently until the oxide dissolves (about five minutes). Transfer the solution and the rinsings of the basin to a 250 c.c. standard flask and add 20 c.c. of dilute hydrochloric acid (twice normal). Then add about 8 grms. of sodium bicarbonate (or 100 c.c. of a cold saturated solution), and dilute the solution to the graduation mark.

*Dose.*—For adults 100 to 120 c.c. of eusol have been given, and the dose may be repeated after twenty-four or forty-eight hours.

For children, as may be seen in the text, doses varying from 10 c.c. to 75 c.c. have been given, according to the age and condition of the patient.

*Method of Injection.*—A 20 c.c. record syringe is employed, and it is convenient to have a small-bore bent needle and a connecting collar with a two-way tap<sup>14</sup>; or a transfusion apparatus may be used. Sterile saline and eusol are heated to body temperature by immersing the flasks in hot water. A few cubic centimetres of saline are taken into the syringe or transfusion apparatus; the needle is inserted into the median basilic vein with or without anaesthetics. The eusol is then injected slowly, not more than 10 c.c. per minute or an adult, and for children 3 to 5 c.c. per minute. After the eusol has been injected the vein is washed out with 20 c.c. of saline

to prevent irritation of the endothelial lining of the vein wall. Care should be exercised to prevent any eusol passing into the tissues round the vein as it causes considerable pain. This is avoided, however, if the syringe is filled with saline until it has been ascertained that the needle is within the lumen of the vein. In the case of infants under 2 years of age the method to adopt is to inject into the superior longitudinal sinus: an anæsthetic is not necessary. The technique of this method is described by Dr. Ann Martin.<sup>13</sup>

REFERENCES.—<sup>1</sup> Lorrain Smith, Drennan, Rettie, and Campbell, *Brit. Med. Journ.*, 1915, vol. ii. p. 129. <sup>2</sup> *Lancet*, 1916, vol. i. pp. 300, 365. <sup>3</sup> Lorrain Smith, Ritchie, and Rettie, *Brit. Med. Journ.*, 1915, vol. ii. p. 716. <sup>4</sup> Fraser and Bates, *Brit. Med. Journ.*, 1916, vol. i. p. 83. <sup>5</sup> Brand and Keith, *Brit. Med. Journ.*, 1916, vol. i. p. 415. <sup>6</sup> Allman Powell, *Brit. Med. Journ.*, 1916, vol. ii. p. 422. <sup>7</sup> Fraser, Campbell, and Dickson, *Brit. Med. Journ.*, 1917, vol. i. p. 357. <sup>8</sup> Hartley, *Brit. Med. Journ.*, 1917, vol. i. p. 481. <sup>9</sup> Dean and Adamson, *Brit. Med. Journ.*, 1916, vol. i. p. 611. <sup>10</sup> Dakin, *Brit. Med. Journ.*, 1916, vol. i. p. 852. <sup>11</sup> *Journ. Hyg.*, 1906, vol. vi. p. 524. <sup>12</sup> Andrewes and Orton, *Cent. f. Bakt.*, Abt. 1 (Orig.), 35, 1903-4, pp. 645, 611. <sup>13</sup> Martin, *Brit. Med. Journ.*, 1916, vol. ii. p. 40. <sup>14</sup> Graham, *Brit. Med. Journ.*, 1916, vol. i. p. 652.

THE SPHERE OF ARTHROPLASTY IN THE  
TREATMENT OF ANKYLOSIS.

By ALEXIS THOMSON.

THE large number of ankylosed joints provided by the present war has suggested to the writer the advisability of revising the sphere of arthroplasty—the indications for and against its employment in relation to the cause of the ankylosis. From the records of my clinic in the Royal Infirmary I have abstracted the following five cases in which the operation was performed sufficiently long ago to enable one to determine the final results.

CASE I.—*Ankylosis of Elbow Joint following Fracture of Lower End of Humerus; Arthroplasty; Recovery of Mobility.*—A motor engineer, æt. 23, was sent to the Infirmary by Dr. Mackay of Aberfeldy, owing to stiffness of the right elbow. The history was, that four months before he was thrown from a motor car, and the lower end of the right humerus was “split in three places”; the limb was retained in a splint for six weeks, at the end of which time it was found that flexion and extension were no longer possible; the fractures had united with excessive callus and with displacement of the fragments, the internal condyle being  $\frac{3}{4}$  in. lower than the external—cubitus valgus.

On the 24th November 1911 it was subjected to operation; the bones entering into the elbow joint were exposed by a posterior median incision; the lower end of the humerus, including the condyles, was removed; the wall of the resulting cavity was liberally smeared with vaseline. There was considerable reaction, the temperature rising to 100° F. the evening of the second day without any quickening of the pulse or respiration. Even after healing took place the elbow was swollen and sensitive, and the movement, at first having a range of 90°, gradually disappeared.

I operated again, therefore, on the 5th March 1912, freely removing the callus that was preventing movement and interposing between the bones a flap from the fascia over the triceps muscle; small amounts of the vaseline were found in the tissues round about. There was again a sharp reaction, the temperature rising to 101° F. the second night after the operation. Seven months later movement at the elbow was free, although restricted in range.

CASE II.—*Ankylosis of Shoulder following upon Injury; Arthroplasty along with Partial Removal of Head of Humerus.*—A girl, æt. 14, was admitted to my wards in the Royal Infirmary on the 15th August 1914 on account of stiffness of the right shoulder, on the recommendation of Dr. Kennedy of Wick. No history was obtainable.



On the 25th August 1914 the joint was exposed by the usual anterior incision; there was found an old-standing separation of the epiphysis and subcoracoid dislocation of the head of the humerus; the greater part of the head was removed to secure free movement of the upper end of the shaft in the glenoid cavity; a portion of fascia lata, large enough to wrap round the head of the bone, was removed from the right thigh and stitched in position between the bones; the limb was put up in the attitude of right-angled abduction. The object of the operation was attained—a sufficient range of movement at the shoulder joint was secured.

*CASE III.—Comminuted Fracture of Patella followed by Ankylosis to Femur; Bones Separated by Open Operation and Interposition of a Flap of Fascia Lata; Recovery of Movement.*—A man, æt. 26, a joiner, was admitted to my wards in the Royal Infirmary on the 27th October 1916, having sustained multiple injuries through falling from the roof of a house—about 25 ft.—the same morning. There was a compound fracture of the shaft of the right femur, a badly comminuted fracture of the right patella, a simple fracture of the left patella, and a fracture of the mandible. There was considerable shock, he bled freely from the nostrils, and he vomited a good deal of blood, both bright red and of the coffee-ground variety. Satisfactory repair took place of all the injuries except in the case of the right patella, which became firmly united to the femur, and all movement at the knee was abolished.

Operation was carried out on the 2nd January 1917; the patella was separated from the femur, and a free flap of fascia lata was inserted between the bones. The temperature rose to 99·4 F. the following evening, but soon subsided, *i.e.* the reaction was very mild.

Massage was carried out, as usual, from the 1st December (?) onwards.

*Result.*—He attended to-day, the 2nd July 1917, walking without a limp and having free movement at the knee from the position of complete extension to an angle of 45°; from the functional point of view, therefore, the operation was a complete success.

*CASE IV.—Osseous Ankylosis of Hip Joint following upon Gonorrhoeal Arthritis; Arthroplasty by Murphy's Method; Recurrence of the Ankylosis.*—A man, æt. 23, a barman by occupation, was admitted to my wards in the Royal Infirmary on the 17th March 1917, on the recommendation of Dr. Murray of Paisley, suffering from bony ankylosis of the right hip joint. He had acquired a gonorrhoeal urethritis in May of the previous year, and three months later he was laid up with an acute infection of the right hip. After a painful illness of sixteen weeks' duration it was found that the joint had become ankylosed; he could only walk with the aid of two sticks, and he was unable to put on the right boot without assistance. Skiagrams showed a complete osseous

ankylosis of the head of the femur and the acetabulum, without evidence of destruction of bone or of new formation of bone in the vicinity of the joint. In view of the evil reputation of ankylosis resulting from gonococcal infection, I was unwilling to attempt to get rid of it by means of an operation, and made it clear to the patient that there was not only a degree of risk attaching to it, but that it might fail to benefit him; he was determined, however, to go through with it, because the existing disability seriously interfered with the conditions of his daily life.

The operation was performed on the 23rd March 1917, and followed as closely as possible the method described and practised by Murphy. The separation of the head of the femur was mainly effected by means of broad, shallow gouges, curved in varying degree, and its dislocation gave good access to the acetabulum. Both articular surfaces were pared until they were reasonably smooth, and a flap of the deep fascia was made to line the socket, and was anchored by a few points of catgut suture. The head of the bone was then replaced, the great trochanter was reapplied and fixed with a steel pin, and the limb steadied between sandbags in the attitude of moderate abduction. The steel pin was removed five weeks later, and the wound being now soundly healed, manipulative treatment was carried out by the masseur. He was sent to the convalescent home on the 31st May 1917, walking with the aid of two sticks and exhibiting limited but quite definite movement at the hip joint. He returned to show himself on the 27th June, when on re-examination it was found that movement had disappeared owing to recurrence of the ankylosis; the condition was not only as bad as it had been before the operation, but there was now shortening of the limb amounting to  $1\frac{1}{2}$  in.

If I were to criticise the technique of this operation in the knowledge of its subsequent failure, it would be to suggest that too little bone was removed from the articular surfaces; one had the fear of diminishing the stability of the joint and also of causing shortening of the limb.

CASE V.—*Ossous Ankylosis of Knee following upon "Acute Arthritis of Infants"; Arthroplasty by Murphy's Method; Recurrence of the Ankylosis.*—A schoolboy, æt. 13, was admitted to the University Clinical Wards on the 7th March 1917 with a complete osseous ankylosis of the right knee. The history was to the effect that when aged 6 years he fell off a dyke and injured the right knee; it became greatly swollen, and a few days later he was admitted to the Glasgow Western Infirmary, where the leg was put up in plaster; on removal of the plaster at the end of a month the knee joint was found to be quite rigid, all movement being abolished. He was able to go about with the help of crutches. The knee is ankylosed in an attitude of almost

complete extension; there is nothing in the shape of depressed scars to suggest an antecedent suppurative lesion; the X-ray shows no evidence of destruction of bone or of new formation of bone such as would indicate a tuberculous lesion or a staphylococcal osteomyelitis. In the absence of any indication of the nature of the lesion that resulted in the bony ankylosis, we were driven to the conclusion that it had followed upon a mild form—non-suppurative—of the “acute arthritis of infants,” and it was therefore regarded as a legitimate subject for the operation of arthroplasty as devised and practised by J. B. Murphy.

The operation was carried out on the 14th May 1917; the bones entering into the knee joint were exposed by an external J incision, and all three—femur, tibia, and patella—were separated from one another by means of osteotomes and gouges: the incision was prolonged upwards to allow of the raising of a large flap of fascia lata which was detached and interposed between the bones, being secured in position at several points by catgut suture. Extension with weight and pulley was applied to the leg.

The operation was followed by a marked reaction, the temperature rising in the evening from 101° to 103° F. on five consecutive days, with considerable pain and swelling of the knee. There was then a return to normal conditions. In spite, however, of skilled massage and persevering efforts to recover movement, bony ankylosis gradually reappeared; the condition is now—two months after the operation—the same as before, save that the affected limb is about  $\frac{3}{4}$  in. shorter than its fellow.

*Commentary on the Above Cases.*—Of the five operations recorded, three were performed for purely traumatic lesions of the shoulder, elbow, and femur patellar articulations respectively, and it may be said of them that they were not only easy of performance, but the functional results were most satisfactory; that is to say, a definite though limited degree of mobility of the joint was obtained, which greatly added to the usefulness of the limb. If one recalls the results obtained by operations for ankylosis in former days, it is to remember the almost inevitable disappointment owing to recurrence of the ankylosis; it was not uncommon, for example, to see an elbow, in which excision for ankylosis had been performed on three different occasions, each time the ankylosis returning in a more aggravated form than before. We are prepared to support the view, therefore, that the interposition of a flap of fascia and fat represents a definite advance in surgical practice, and advise that it should be had recourse to in all cases of injuries of joints in which ankylosis is likely to occur. We are



prepared to go further, and *employ the procedure as a prophylactic measure* at the primary operation for fixation of the articular fragments; we believe that by so doing a wider range of movement would be obtained than when it is employed for the "cure" of ankylosis; time would be saved, massage could be employed earlier, and the soft parts in and around the joint would retain to a greater degree their normal functions.

In the two remaining cases arthroplasty was performed for ankylosis resulting from an infective condition—in the case of the knee a staphylococcal infection, and in the case of the hip a gonococcal infection; in both the operation entirely failed in its object, even the limited mobility initially obtained being lost again owing to a recurrence of the ankylosis. Previous experience of the result of attempts to restore mobility to joints stiffened or ankylosed by gonorrhœal arthritis made me doubtful of the wisdom of performing arthroplasty in the above case, and the result of the operation serves to increase the doubt. The stimulation of the bone-forming tissues in and around the joint by gonorrhœal infection would appear to contra-indicate any attempt by operation or otherwise to restore mobility when the ankylosis is due to this cause.

I have not considered it advisable to perform arthroplasty in joints that have become ankylosed as a result of the infections that have been so prominently associated with the gunshot injuries sustained in the present war; there would not only be the likelihood of lighting up the original infection, increased in this operation by the insertion of the fascia, but the considerable probability of its being followed by a recurrence of the ankylosis.

Resuming, then, in conclusion, the *sphere of arthroplasty*, it may be formulated that while it may be brilliantly successful in joints ankylosed by purely traumatic lesions, it is liable to fail in joints ankylosed as a result of bacterial infection. The two great *causes of failure* are found to be—either a recrudescence of the original infection, *e.g.* tuberculosis,\* and dormant infections of gunshot injuries, interfering with the formation of the false joint, or an increased activity of the bone-forming tissues leading to a return of the ankylosis.

\* Mr. J. M. Graham informs me of a case in which he performed arthroplasty at the knee for ankylosis resulting from tuberculous disease, in which failure resulted owing to recrudescence of the tuberculosis.



**CLINICAL RECORD.**

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CARCINOMA OF PELVIC COLON: RESECTION. THREE YEARS LATER, RECURRENCE IN RECTUM: COLOSTOMY. ONE YEAR LATER, CARCINOMATOUS STRICTURE, SMALL INTESTINE: RESECTION. CARCINOMA AT COLOSTOMY OPENING: DEATH SIX YEARS AFTER FIRST OPERATION.

By J. W. DOWDEN.

Mrs. K., a very stout lady of 60, complained of frequent movement of the bowels, only a small amount passing at a time. There was also a certain amount of blood-stained mucus. Through the abdominal wall an indistinct mass could be palpated in the left iliac region, resembling in shape and size a watch. It was easily pushed towards the middle line and lost, to be found again, after a few deep breaths, at the same place. Probable malignant disease of the pelvic colon was diagnosed, and operation advised and carried out.

On opening the abdomen through an exceedingly thick wall a mass like the closed fist was found, involving a portion of the pelvic colon. The mass resembled a fatty tumour in every particular, and nothing was seen but the large digitations of fat. The whole circumference of the bowel was surrounded by this mass. This area was resected, and an end-to-end anastomosis carried out with much difficulty, owing to the fat. The resected portion showed a round ulcerated area in the interior, about 2 ins. in diameter, which proved on microscopic examination to be malignant in character. She made an uninterrupted recovery, and remained perfectly well for three years, when she returned with the complaint that her old symptoms had recurred. As nothing could be palpated through the abdomen or per rectum, an exploratory operation was advised. At this operation the fatty condition around the intestine was strikingly lessened, and the site of the previous anastomosis was easily found, uncovered by the fat that previously had been there. As there was nothing abnormal to be seen, the hand was introduced, and a rounded hard swelling could be felt on the floor of the pelvis, partly covered by peritoneum. From her general adipose condition and her age it was deemed advisable to perform colostomy. She was relieved of

her symptoms, and continued well for a year, when she began to suffer from attacks of colicky pain, followed by diarrhœa from the colostomy opening. At first an attack would last a few days, and was followed by an interval of comfort for many weeks. Then a recurrence would take place for a longer period, with a lessened interval of freedom, till finally the attacks were almost constant, the colicky pain returning every few minutes. The condition was most distressing, from the fact that she had this uncontrolled colostomy opening, and her life was rendered miserable by the pain and diarrhœa. Obstruction in the small intestine was considered most likely, due to adhesions, but an X-ray examination revealed a most obvious "hour-glass" stomach. An operation was then carried out in the upper abdomen, and a perfectly normal stomach presented itself. Below this, however, there was an enormously distended small intestine. The small intestine was dilated to about 3 ins. in diameter, with marked hypertrophy, and terminated at a point about 3 ft. from the stomach, in an annular stricture of the "tied-string" type. This was resected, and a lateral anastomosis carried out. She did exceedingly well till the eighth day, when, on making an effort to raise herself in bed, she was seized with sudden agonising pain in her wound, and collapsed, with feeble pulse and sweating. In twelve hours the wound had opened, and the intestines were protruding. The wound had been sewn with No. 3 catgut, labelled "20 day." An anæsthetic was given, the wound thoroughly opened up, the intestines reduced, and stitches of thick silk introduced through all layers. Though she was thinner than at the previous operations, the thickness of the abdominal wall may be judged by the fact that a straight-handled needle 6 ins. long could only be passed through one side at a time. Unfortunately the wound suppurated slightly, and though the stitches were kept in for some time, a ventral hernia subsequently developed. As regards the after-history, she was exceedingly plucky, and went about walking and driving, though gradually and slowly failing in health. In a few months there was evidence of malignant disease at the colostomy opening, and, owing to contraction there, the opening had to be dilated from time to time. Radium was applied with little result. She was up and about every day, though in feeble health. One day, when coming into the house from the garden, she fell lightly, and had to be carried to bed, from which she never rose, and died within forty-eight hours, from symptoms which could only be called failure of general compensation.

The points of interest in the case are—(1) The elusive initial tumour, which could only be made out by most careful palpation; (2) the extraordinary fatty hypertrophy of the appendices epiploicæ; (3) the X-ray findings previous to the third operation, when an apparent “hour-glass” stomach was revealed, due really to the bismuth of the first meal having passed into the dilated small intestine, and the second bismuth meal lying in the healthy stomach; (4) the recurrence in the colostomy opening; and (5) the compensatory power, ultimately hovering on a precipice, which was upset by a slight ulterior accident, ending rapidly in death.

In reviewing a case such as this it is natural to consider where the primary disease was really situated, and it seems probable that the disease in the small intestine was the cause of the developments lower down, and that the subsequent infections were also due to it.

In connection with this case there has been recently under my care a man on whom I operated for epithelioma of the fauces, who developed shortly afterwards malignant disease of the rectum.

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## OBITUARY.

## THOMAS BROWN DARLING, M.D.

THE announcement of the sudden death, at Alvie Church on 29th July, of Dr. Thomas Brown Darling, brought a shock of painful surprise to his many friends and patients. His was a familiar figure in Edinburgh; and up to the time of his going North on holiday, on 16th July, he was daily engaged on the work of his large practice, and seemed to be in his usual health. To some of us, however, it was known that the labours of these recent months had told upon his heart, and the illness and death of his wife in March last had added considerably to the strain upon him. He was advised to give himself a thorough rest on his holiday. Perhaps he did not sufficiently restrain the abounding energy that was characteristic of him. On that Sunday morning (29th July) he cycled from Aviemore to the parish church at Alvie, a distance of three miles. The service had just begun, and the 89th Psalm, vv. 15 to 18, had been given out. He was standing to take his part in the singing, when he collapsed, and expired immediately. He was in his 59th year.

By his passing, general practice in Edinburgh has lost one of its best exponents. Endowed by Nature with good powers of observation and shrewd common sense, he had acquired a sound knowledge of medicine and surgery. Following his graduation in 1884 (M.D. 1890) he became resident under Annandale at the Royal, and, later, under Berry Hart at the Maternity. In 1887 he began practice in Morning-side, and thus for thirty years was associated with that district of the city. He rapidly established himself in the confidence and esteem of his *clientèle*. He was careful and accurate in diagnosis, and resourceful in treatment. He seemed to have a "cross-indexed" mind, providing help in many a difficult situation. Alertness and promptness of action were indeed characteristic of him; and to these two qualities may be attributed much of his success as a practitioner. In cases of doubt or difficulty he had an unerring instinct for dangers ahead, and it was a habit with him to call for specialised expert help without the least delay.

Genial, full of kindly humour—even to the length of a practical joke—and of real goodness of heart, he endeared himself to his many patients, who felt that they could rely not only upon the thoroughness of his professional work, but upon his sympathy and kindly regard for their general interests. He will live long in the affectionate memory of his patients.



Darling was a loyal colleague, and hearty and straight in his dealings with his professional brethren. He was singularly free from self-consciousness and "airs." To be simply helpful seemed to be a real pleasure to him. To some of us who were in frequent touch with him his loss is well-nigh irreparable. We mourn him as a brother beloved.

This is perhaps not the place to take account of his many activities outside the domain of medicine. He was a Christian man, simple and earnest. He took much to do with church and mission work, and he was faithful in it, as in all he did. He was an elder in North Morningside United Free Church, a Director of the Carrubbers' Close Mission and of the Edinburgh Medical Missionary Society, and a life-long worker in the cause of Temperance. With this last his name will always be associated, for it was one of his dearest interests. He eagerly looked forward to 1920, when the Scottish Temperance Act comes fully into force. When that time arrives, it will be meet to remember with gratitude the man who, by his work and example, did so much in his day to commend temperance to his fellow-countrymen.

Dr. Darling was twice married. He is survived by a son, James Walker Darling, M.B., Ch.B., who has been serving in Malta and France as Captain in the R.A.M.C., and by two daughters. Of his two step-daughters, one, Miss E. D. Smaill (Royal Red Cross), after service in France, is now Assistant Matron at Craigleith Military Hospital; the other is married to Dr. Henry Watson, Reigate. E. F. A.

## RECENT ADVANCES IN MEDICAL SCIENCE.

## MEDICINE.

UNDER THE CHARGE OF

W. T. RITCHIE, M.D., EDWIN MATTHEW, M.D., J. D. COMRIE, M.D.,  
AND A. GOODALL, M.D.

## COMMONER ABNORMALITIES OF THE HEART IN HEALTHY PEOPLE.

THE deviations of the heart from the ordinary state which are found in the course of examination of supposedly normal individuals who present themselves for life insurance, for entry into the Navy or Army, to join benefit societies, etc., form at the present time a matter of special interest, and are treated by Thayer in an exhaustive communication (*Med. Rec.*, 14th April 1917). The hypertrophy of adolescence with cardiac apex in the nipple line, strong impulse, and first sound loud and booming depends, he says, in many cases, on a simple disproportion between the size of the heart and the size of the chest, the heart having reached its full growth before the rest of the frame. Such a condition he finds in no sense alarming if the boy has about reached puberty, unless the heart is really larger than it should be in the adult. The movability of the normal heart is a factor which the examiner sometimes forgets when he examines the patient in an unusual position. When the patient turns from side to side the displacement of the normal heart sometimes amounts to a hand's-breadth. Reduplication of the second sound during inspiration is dependent on delay in the closure of the pulmonary valve segments, and is present in a good many normal individuals; if it is present throughout the respiratory cycle, or associated with other signs of cardiac disease, it may perhaps be regarded as confirmatory evidence of muscular weakness. A third sound, or protodiastolic gallop, is audible in a large proportion of young people when they are examined in the recumbent or left lateral position; if there is no other sign of heart disease this may be regarded as a perfectly normal phenomenon. In some young people a presystolic gallop may be heard, and this also, if unassociated with other evidence of disease, is of no pathological significance. When these sounds are of considerable intensity the protodiastolic one is commonly associated with ventricular dilatation and the presystolic with hypertrophy and hypertension. Systolic murmurs in the pulmonary area, which are increased or produced during expiration and lessen during inspiration, are entirely devoid of pathological significance. Thayer and MacCallum, in the course of experiments on dogs, found

that the slightest pressure on the conus produced a murmur, and Thayer therefore concludes that this systolic murmur at the base of the heart in young individuals appears during expiration owing to pressure against the ribs, and disappears on inspiration owing to the interposition of a soft cushion of lung. Similar murmurs are very commonly heard at the apex in young persons when they are examined on the back or left side, and when such murmurs disappear in the erect posture and are unassociated with other evidences of cardiac disease they, too, are of no pathological significance. Cardio-respiratory murmurs are very common, and notably a loud systolic inspiratory murmur heard in the back after exercise; they are not intracardial in origin, and they indicate no abnormality. Respiratory arrhythmia, consisting of a quickening of the pulse-rate with inspiration and a slowing off during expiration, is very common in children, in adolescents and in the neurasthenic; but if the sequence of auricular and ventricular contractions is shown by the polygraph or electrocardiograph to be normal, it is of absolutely no pathological importance. A similar criterion applies to sinus arrhythmias, which are sometimes found to be accentuated by respiration in a similar manner. Irregularity, due to the occurrence of extrasystoles, is a condition which of itself gives no evidence as to the state of the heart muscle or the limits of the cardiac power; they are very often met in persons who are under serious nervous or mental strain, *e.g.* clergymen and students; they are often related to certain toxic influences, *e.g.* tobacco and coffee, or even follow upon an unduly large meal: in such cases their occurrence may persist through many years and be simply an evidence of increased irritability in the heart muscle. If there be no cardiac hypertrophy nor arterial sclerosis, and if the heart responds normally to exercise, with temporary disappearance of the extrasystoles, one need not assume the existence of any serious cardiac defect.

#### TREATMENT OF DIPHTHERIA CARRIERS.

Benard (*La Presse Méd.*, 17th May 1917) draws attention to the great difficulty that often exists in thoroughly disinfecting the nasopharynx after diphtheria or after contact with diphtheritics by means of the usual antiseptic swabs and gargles. He instances a series of seven soldiers who, despite all treatment, continued to give a positive result on bacteriological examination of the throat and nose, over periods varying from thirteen to thirty-two weeks, the test being carried out once a week. A much more simple, pleasant, and efficacious mode of treatment is to be found in the insufflation of a powder containing powdered antidiphtheritic serum. He found that (in addition to the usual serum injections) the insufflation of the powder expedited the recovery greatly in cases of diphtheria. Secondly, that in convalescents

its use hastened the disappearance of the bacteria from the nose and throat, all tests being negative after from eight to fifteen days. Finally, that in healthy carriers or contacts the tests were negative after one week to eighteen days. The powder which he used is composed as follows :—

Dried antidiphtheritic serum . . . . .	10	grs.
Novarsenobenzol Billon . . . . .	0.9	gr.
Powdered benzoin . . . . .	1	„
Carbonate of bismuth . . . . .	100	grs.

#### BLOOD-PRESSURE OBSERVATIONS.

Faught (*Med. Rec.*, 12th May 1917) considers the value and significance of some of the blood-pressure formulas approved at the present time. He is of opinion that the systolic blood-pressure alone is of far less clinical value than when considered in relation to diastolic pressure, the pulse-pressure, and the pulse-rate. He does not agree with Stone's formula for the heart-load ratio  $\frac{PP}{DP}$  which in normal individuals should equal from 0.40 to 0.60, and considers that cardiac energy is best indicated when the sphygmomanometer is used, by the systolic pressure alone. He concludes that the maintenance of the 3:2:1 (systolic, diastolic, pulse-pressure) ratio, even with markedly elevated systolic pressure, usually indicates an efficient circulation. Diastolic pressure, he considers, is our best indication as to the state of peripheral resistance, and is of value in toxæmic, hypersensitive, and arteriosclerotic conditions. A small pulse-pressure in high-pressure cases is suggestive of myocardial involvement, and this indication becomes more serious as the cardiac rhythm becomes altered.

Blood-pressure from the life insurance standpoint has in the past ten years become a routine procedure and is discussed by Goepf (*ibid.*). The test is required by most American companies when the proposal is one for over a moderate sum or when the proposer is over 40 years of age. A systolic blood-pressure of over 140 mm. without other impairment seriously affects the mortality : while in cases with 150 mm. the mortality is 50 per cent. above average.

Blood-pressure from the standpoint of the surgeon is considered by Mueller (*ibid.*). He considers its estimation valuable as a "sign-post," for when the systolic pressure is over 160 or the diastolic above 100 this calls for a special investigation of the renal functions prior to operation. Hypotension, on the other hand, indicates the necessity for pre-operative treatment. During prolonged major operations he considers that the blood-pressure should be frequently taken, when a systolic pressure of 90 or diastolic of 60 indicates the presence of shock and the necessity for immediate treatment until the diastolic pressure again rises to 80.



## COLLOIDAL SULPHUR IN MYALGIA.

The use of intramuscular injections of this substance in the treatment of "trench rheumatism" and allied conditions is strongly advocated by Comrie (*Lancet*, 30th June 1917). He finds that intramuscular injections of colloidal sulphur are of the very greatest value in the treatment of subacute painful conditions in the muscles and joints. The most satisfactory course of treatment consists of an injection administered every second day for three weeks (ten injections), combined with rest, massage, and occasional alkaline hot baths on the intervening days. In the greater number of subacute cases, lasting several months, complete recovery may be expected after three to five weeks from the commencement of the treatment. This method is also very helpful in lingering cases of gonorrhoeal rheumatism. It does not, however, take the place of salicylate of soda in relieving the pains of acute articular rheumatism.

J. D. C.

## SURGERY.

UNDER THE CHARGE OF

J. W. STRUTHERS, F.R.C.S., D. P. D. WILKIE, F.R.C.S.,  
AND JAMES M. GRAHAM, F.R.C.S.

## THE TREATMENT OF BENIGN NEOPLASMS OF THE BLADDER.

IT has been generally recognised that even simple papillomata of the bladder are liable to recur after operative interference, and that the fresh growths may develop in greater numbers and over a wider area than was originally affected. The treatment of such growths was greatly advanced by the introduction by Nitze of intra-urethral methods of operating by snare and cautery. In a series of cases treated by this method it was shown conclusively that, if radically removed without traumatism and without producing raw areas for tumour transplantation, there is little danger of recurrence, and that a large proportion of these growths are not malignant. While the results achieved by Nitze were excellent, the technique has proved difficult, and few operators have acquired the necessary skill, in spite of numerous modifications of the operating cystoscopes devised for the purpose. Since 1910 the problem has been simplified by reverting to the simple type of catheterising cystoscope, which, by means of properly insulated electrodes, enables the growths to be cauterised with the high-frequency current. In this way the results achieved by Nitze may be attained without the special skill necessary for his technique.

Beer (*Surg., Gynec., Obstet.*, June 1917) has found the high-frequency

cauterisation method both simple and effective. His original cases, five and six years after treatment, have remained free from recurrence. Three instruments are required for carrying out the treatment—the catheterising cystoscope, the high-frequency current (Oudin) generator, and a well-insulated copper wire. The tumour is located, and the wire electrode is then pushed into the papilloma, and the previously tested current is allowed to play. Hydrogen gas is seen to bubble out of the growth, and its fronds become blanched and necrotic. Multiple points of application are made, lasting thirty seconds each. If there is no bleeding, as is the rule, the patient is allowed to return home for a period of six or seven days, during which time he should take urotropin and large quantities of bland fluids to assist in the discharge of the necrotic villi through the urethra. The cauterisation may require to be repeated on one or more occasions. The author has destroyed very large growths in three or four sessions. The total application of the current necessary to destroy a moderate-sized growth may be only ten or fifteen minutes.

It is necessary to note that certain cases are not suitable for this simple method.

1. Certain patients are intolerant, but with local anaesthesia and judicious use of morphine almost every one can bear the cystoscopic manipulations.

2. Cases which bleed freely on introduction of the cystoscope.

3. Cases where the tumour is inaccessible, *e.g.* behind a large prostate.

4. Patients with papillomatosis of the bladder, either primary or subsequent to a former operation—a condition in which numerous growths are scattered over the vesical mucosa.

Cases which cannot be treated by trans-urethral high-frequency cauterisation require an operation, the technique of which is specially directed against the danger of breaking off portions of the villous growths and the subsequent risk of recurrence. For this purpose the intravesical operation is done entirely with the Paquelin cautery. The bladder is not filled with fluid before incision. The patient is placed in the Trendelenburg position, and the bladder must be drawn out of the abdomen by its urachal end, so that the peritoneum can be stripped back without unduly bruising the bladder. The prevesical space may be protected from implants by gauze packing. The incision in the bladder is gradually enlarged without any rough handling, and each tumour as it presents is burned to a crisp. Any suspicious spot in the bladder is cauterised, and the edges of the vesical wound are similarly treated. Finally, the whole operative field should be soaked with alcohol to destroy any particles of viable growth that might have accidentally broken off during the manipulations. The Paquelin cautery may be so used for the greater part of an hour without more subsequent

discomfort than is usual in a simple cystotomy. The author has examined cases treated thus eighteen months after the operation, and has found no trace of the effects of the cautery except slight blanching of the mucosa. From his experience Beer is convinced that the use of the cautery, in cases which cannot be treated cystoscopically, is a great advance on the more usual cutting operation, as, however carefully the latter method is performed, there is always a considerable risk of recurrence through fragments of villous growths being accidentally detached and implanted on healthy mucosa.

#### RESPIRATORY SUCTION IN SURGICAL SHOCK.

Porter (*Boston Med. and Surg. Journ.*, 17th May 1917) points out that in cases of surgical shock slight changes in the arterial pressure may determine the question of life or death. The diastolic pressure may fall from normal to the critical line with little or no danger, but a further fall of even 10 mm. is fatal, unless skilled assistance be at hand.

In shock the patient bleeds into his abdominal veins, and the blood is taken from the heart and brain. The inclined position will feed the heart and brain by gravity, but death may ensue before gravity has time to take effect. Time may be gained by adrenalin and by injection of normal saline into the veins. Both tend to fill the heart—one by narrowing the arterial outlets and the other by adding to the volume of the blood—but neither method brings the blood from the congested veins into the arteries and then into the feeding capillaries. What is desired in these cases is some method of pumping the blood from the dilated veins into the heart. To achieve this ideal Porter proposes to employ what he calls the thoracic pump, which simply means the suction action of the thorax in respiration. When the diaphragm is depressed on inspiration the cavity of the thorax is enlarged, and air is drawn in through the trachea and blood is sucked in through the veins. In man this suction may balance a column of mercury 30 mm. high, equal to a column of blood 15 ins. high—a value equal to one-third of the total normal diastolic pressure of the blood. As the circulation is influenced by normal respirations, it is reasonable to assume that it will be still further aided by powerful and frequent contractions of the diaphragm, such as occur when the amount of carbon dioxide in the inspired air is increased. The author has applied this theory experimentally in animals. By increasing the amount of carbon dioxide deep and rapid respirations are produced without any injurious effect. In performing the experiments the gas was discharged through a Wolff bottle into a T tube, the short limb of which is attached to the tracheal cannula. The same effect may be more simply achieved in man by a process of rebreathing into a rubber bag; when oxygen hunger approaches the bag is removed,



and in a moment or two the process may be repeated. Deep and rapid respiration was produced in many experimental animals in whom shock had been caused by injecting oil into the jugular vein. The diastolic pressure in these animals was often dangerously low. In every case the diastolic pressure rose from 15 to 30 mm. of mercury. Such a rise, in cases where the pressure is from 50 to 70 mm., carries the pressure out of the danger zone. The author has not yet applied the method to human cases of shock, but believes that carbon dioxide respiration in men will cause at least as great a rise of blood-pressure as in animals.

#### METHODS OF REPAIRING DEFECTS OF THE SKULL.

Villandre (*La Presse Méd.*, 24th May 1917) has operated on 106 cases in which there has been a defect in the skull resulting either from injury or operation. The indications for operating in such cases are as follows:—(1) When the gap in the bone is extensive in the frontal, parietal, parieto-temporal, or parieto-occipital regions it may be advisable to adopt measures for protecting the surface of the brain; (2) when the scar over the gap is thin and liable to ulcerate or give way it should be replaced by flaps of healthy scalp or of skin from the frontal region; (3) the presence of a gap may cause the patient inconvenience when the intracranial pressure is raised by a sudden effort, and in such cases it is advisable to provide an unyielding surface; (4) occasionally operation is indicated in cases of severe headache, which resists other treatment, even when the opening in the skull is small.

The author has employed four different methods for performing cranioplasty. In four cases, where the gap was small in extent, a paste, composed of phosphate and carbonate of lime mixed with olive oil, was employed, but the results were not encouraging, as in two of the cases the paste was not tolerated by the tissues and was discharged.

In twenty-two cases, where the gap was not greater than 3 to 4 cm. in diameter, fragments of bone, which were sterilised first in the autoclave at 130°, were employed. These were obtained from various sources, and included portions of human skull and ribs and portions of the skull, scapula, or iliac bone of the sheep. After suitable shaping, the fragment of bone is fixed in the gap by a catgut suture inserted through the pericranium. The results of this method were not entirely satisfactory. In four of the cases the implanted bone acted as a foreign body, and in the remaining eighteen cases the patients complained of severe headache for a week or two or sometimes longer after the operation.

Autoplastic grafts of costal cartilage or of bone and its periosteum from the tibia gave almost uniformly successful results. The bone



graft from the tibia was employed successfully in every case in a series of thirty-two cases, and with this material there was a notable absence of after-headache, indicating the better tolerance of the living graft by the tissues as contrasted with sterilised bone. A considerable margin of free periosteum should be removed in addition to that covering the graft from the tibia. If necessary a thin graft of 6 to 8 cm. in length may be cut, with a breadth of from 2 to 3 cm. Instead of bridging the gap with a single graft, several strips of bone, with its periosteum, may be arranged so that they overlap. The periosteal surface should be applied next the dura mater. The ends of the graft should be pared down so that they may rest without projecting on the pericranium at the edge of the gap. The subsequent repair of the gap is always firmer after transplantation of bone than when cartilage has been used. In very large defects of the skull it may be advantageous to combine both forms of graft. The author believes that a certain amount of new bone is subsequently formed from the transplanted bone and periosteum.

In forty-eight cases the cranial defect was filled by portions of costal cartilage, as recommended first by Morestin. The operation was successful in all but two of the cases, and the grafts, with few exceptions, united firmly in position. When the gap is of any size, several grafts of cartilage will be necessary. These are placed between the dura and the scalp, and there may be some difficulty in preventing them from shifting their position. The author recommends for fixing the grafts the insertion of several catgut strands through the edge of the pericranium and crossing the defect in the skull so as to form a sort of meshwork around or over the grafts. Large grafts are not advisable, as there is a tendency for the surface to curve inwards and to press upon the cortex.

There was no operative mortality in the series of 106 cases.

J. M. G.

## OBSTETRICS AND GYNECOLOGY.

UNDER THE CHARGE OF

A. H. F. BARBOUR, M.D., AND J. W. BALLANTYNE, M.D.

### MOTHER AND CHILD WELFARE IN FRANCE.

THE long discussion on the subject of the protection of mothers and infants in factories, and especially in munition works, which has occupied so many sittings of the French Academy of Medicine, and to which reference has already been made (*Edin. Med. Journ.*, June 1917, p. 452), has at length been brought to a conclusion, and several findings have been stated (*Bull. de l'Académie de médecine*, No. 11, for 13th March 1917, pp. 354-370). The Academy, keeping in mind that the extension of women's work in factories, and especially in munition

works, will bring a serious risk of depopulation if the pregnant and the nursing woman worker be not sufficiently and immediately protected, puts forward the following recommendations:—(1) Pregnant and nursing women employed in works, and particularly in munition works, must be given only things to do requiring an effort which shall be moderate both in form and duration. Every kind of occupation exposing the worker to traumatism (slow or rapid), causing fatigue, and leading to insufficient sleep should be forbidden to them; the half-day system, with a maximum of six hours, should be applied to them in preference. They must be set free entirely from night work. They shall be excluded from every kind of employment, which by its dangerous, its toxic, or its anti-hygienic character, would constitute a risk to their health and would, in consequence, compromise the pregnancy and lactation. (2) The repose for, approximately, four weeks before confinement, which was made optional by the law of 17th June 1913, should be made obligatory for women workers in munition factories. (3) Consultations regarding mother and child welfare, conducted by a doctor of medicine, shall be provided for the women workers, so as to furnish them with advice and suitable treatment. The doctor in charge shall have the power of stating the necessity for a change of employment, for the lessening of the work, and even for its stoppage altogether in every pregnant or nursing woman in whom he shall regard its continuance as likely to compromise her health or the life of her child. In order to obtain for women workers in factories and munition works the advantage of the health conditions which their sex demands, the appointment of a special woman superintendent is essential. She would be intermediate between the male staff of the workshops and the women workers. The factory superintendent of the British system should be represented in French industry. (4) For the purpose of favouring maternal nursing there should be measures adopted in factories and munition works for allowing women to nurse their babies under thoroughly hygienic conditions and during their working hours. The same privileges should be given to wet-nurses who may be working in the factories. (5) The pregnant or nursing woman whose condition causes her to change her employment or to reduce or cease her work shall receive an allowance compensating her for the diminution in or the loss of her salary. This allowance should be guaranteed by the State, working through some insurance association. (6) In addition to providing rooms for nursing the babies the administration ought also to establish day nurseries for the children where the necessity arises.

#### PREGNANCY AND FIBROID TUMOURS.

Dr. A. Heimo, the first assistant in the Obstetrical and Gynaecological Clinic of the University of Geneva (*Ann. de gynéc. et d'obstét.*,

1917, s. 2, vol. xii. pp. 449-557), has recorded four cases in which pregnancy was complicated by the presence of a uterine fibroid. His observations were made under the supervision of Professor Beuttner of the University of Geneva. It is clear that myomata are a more frequent complication of pregnancy than has hitherto been thought; but, on the other hand, the records at Geneva show that their influence does not frequently act as an obstruction in labour. At Beuttner's clinic, between the years 1907 and 1915, in only four instances (those related in this article) was surgical interference necessary. An interesting diagnostic sign is spoken of. If an irregularity in the contour of the pregnant uterus is noticed, its disappearance under an artificially induced contraction of that organ will prove that it was due to a small part of the foetus, whilst its accentuation will point to its myomatous character. Even with the aid of this means of differentiation one is sometimes in doubt, and it is for this reason that laparotomy is to be preferred as the operative procedure. Having opened the abdomen, the operator can see clearly what is present, and can decide upon the best plan to follow. The vaginal route is obscure, and the following of it is apt to lead to "disagreeable surprises." Generally speaking, hysterectomy is to be chosen; but in the presence of a single and clearly circumscribed subperitoneal fibroid enucleation (myomectomy) is not to be put lightly aside. Dr. Heimo is of opinion, from the study of the Geneva cases, that fibroids do not in a large proportion of patients lead to sterility. Not more than 20 per cent. of the women suffering from these tumours were sterile. He quotes Hofmeier's statement, that in some cases the fibroid actually facilitates conception by delaying the menopause. Pinard takes another line of thought, and believes that the presence of uterine myomata is a consequence of sterility, that it is in fact a punishment inflicted upon every uterus which has not fulfilled its physiological duty. Dr. Heimo's general conclusion is that there has been a widespread tendency to exaggerate the influence of myomata in causing sterility and their evil effects upon pregnancy. Further, individual cases differ so much in every detail that each must be looked at upon its own merits. In support of what Dr. Heimo has maintained regarding the value of enucleation in some cases of myomata in the pregnant uterus, allusion may here be made to Dr. John A. McGlinn's record of two successful myomectomies during gestation (*Amer. Journ. Obstet.*, March 1917, vol. lxxv. pp. 406-408). He points out that myomectomy in the case of the non-pregnant woman has a mortality as high or higher than subtotal hysterectomy on account of hæmorrhage and infection, and that in pregnancy these dangers are increased, whilst the risks of abortion are added, and after the fifth month that of uterine rupture appears. At the same time justifiable indications are occasionally met with. Thus, in one of the two instances cited by Dr. McGlinn the



tumour—an intraligamentous fibroid on the right side—so entirely filled the pelvis there as to displace the uterus to the other side and press injuriously on the bladder and rectum. For this reason the broad ligament was opened, the tumour was shelled out and cut away from its uterine attachment, and the wound in the uterus (about 3 ins. in length) was closed with catgut sutures. She made a good recovery and was delivered at the full term of a living child after a normal labour. In the second case the diagnosis of rupture of an extra-uterine pregnancy was made on account of sudden and agonising abdominal pain and shock. The abdomen was opened, and then it was found that a pedunculated fibroid tumour of the uterus had undergone torsion of its pedicle. It was enucleated, and, notwithstanding the fears of the operator, the pregnancy (then at the fifth month) progressed to the full term, and a living child was born after an easy labour.

It is not always possible to distinguish between pregnancy and a fibroid of the uterus without operation. Thus Dr. A. M. Judd reported to the Brooklyn Gynecological Society (*Amer. Journ. Obstet.*, March 1917, vol. lxxv. pp. 496-498) two cases of degenerated myomata, in both of which he was unable to exclude pregnancy until he had opened the abdomen. In the first case—a woman 43 years of age who had had seven full-time labours and two miscarriages—the menstrual history had been regular till seven weeks before Dr. Judd had seen her. There was pain in the lower part of the abdomen, a quick pulse, and a temperature of 100° to 102°, and a smooth, round, hard mass about the size of a four-months' pregnancy; there was some moisture in the nipples, but no foetal heart was heard. The diagnosis of early pregnancy complicated by a fibroid was made, and, when the temperature had fallen, Dr. Judd performed hysterectomy. The pathologist reported the presence of a degenerating fibroid without pregnancy; the uterus showed an interstitial endometritis. The second case was even more interesting. The patient was 39 years of age, and she complained of vaginal hæmorrhage; she had been married for two years and had had three miscarriages. The uterus was enlarged to the size of a four-months' pregnancy. There was a temperature of 100°. The abdomen was opened, and if Dr. Judd had not noticed a nodule projecting from the right side of the uterus he would have regarded it as a simple case of pregnancy and closed the cavity again. As it was, he removed the uterus and received from the pathologist the report that the condition might be a fibroid tumour undergoing myxomatous or hydatid degeneration, or that it might be a hydatid mole undergoing fibroid changes. The endometrium in its histology showed no evidences of pregnancy, but was simply hypertrophied. In both these cases the softness of the tumour suggested pregnancy. At the same meeting at which Dr. Judd recorded his



diagnostic difficulties Dr. A. C. Beck (p. 498) showed a specimen of fibroid tumour which had complicated pregnancy and labour. The patient was a thirty-year-old primiparous negress in whose uterus several fibroids could be palpated. One of these tumours was fixed in and completely obstructed the pelvic inlet. Since the woman was desirous of having a child it was decided to allow the pregnancy to go to term and perform Cesarean section. With the onset of labour pains the big obstructing fibroid was drawn by the uterine contractions up out of the pelvis, and so for the time being the brim was set free for the foetus to enter. The child, however, was presenting by the breech, and it was feared the tumour would again descend and block the head, so the Cesarean section was performed, and then the uterus was removed. Both mother and child did well. Dr. J. O. Polak (p. 499) also showed a specimen of a myoma complicating pregnancy. The patient was 30 years of age, and had enjoyed good health till the commencement of her pregnancy, when she was seized with intense pain, vomiting, and obstipation. Later, she had a second attack, when Dr. Polak saw her, and found a sensitive mass in the lower part of the abdomen, accompanied by a rise of temperature, by leucocytosis, and by an increased polynuclear count. The diagnosis of pregnancy with a degenerating fibroid tumour was made. After the subsidence of the temperature Dr. Polak opened the abdomen and removed the tumour and the uterus. The pregnancy was in a sacculation of the uterus, which was adherent and incarcerated in the pouch of Douglas, with the tumour, a degenerating fibroid, attached to the anterior uterine wall, lying above it. The woman made a good recovery.

The cases which have been summarised above reveal the numerous diagnostic pitfalls which await the observer, be he obstetrician or gynecologist; they illustrate the caution which must be used in dealing with such complications even after the abdomen has been opened; and they exhibit the modifying influences of a pregnancy upon such tumours. In no circumstances more than in gestations complicated by fibroid growths must the old caution of never being surprised by any happenings be more scrupulously observed; and the surgeon must be ready-witted as well as ready-handed to deal successfully with the various emergencies which may face him.

J. W. B.

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#### REPORT BY THE CENTRAL MIDWIVES BOARD FOR SCOTLAND.

In terms of section 24 of the Midwives (Scotland) Act, 1915, the Central Midwives Board for Scotland have the honour to present the following report of their work during the past year:—

*Constitution of the Board.*—The Midwives (Scotland) Act was passed on the 23rd December 1915. On 18th February 1916 the Board was

duly constituted, with the exception of two members, representatives of the midwives, to be appointed by the Lord President of the Council when a sufficient number of midwives had been enrolled.

On 19th April 1916 the Order of the Privy Council approving of the rules prepared for the institution of the roll was received. Thereafter steps were taken for advertising that the roll was open, and the medical officers of health and local supervising authorities were sent an explanatory statement showing the position of matters.

The Board resolved to delay the final revision of the rules for the supervision of midwives until the two representatives of the midwives had been appointed by the Lord President of the Council.

On 25th May 1916 it was reported that a sufficient number of midwives had enrolled to permit of the list being submitted to the Lord President of the Council in order that he might make the necessary appointments. The intimation of the appointment of the representatives of the midwives by the Lord President was made on 6th July 1916.

*Rules Prepared.*—The rules were thereafter finally revised and adjusted.

It may be pointed out that consideration of these rules was also delayed until the proofs of the new rules prepared by the Central Midwives Board for England were available (July 1916), and the Board resolved that the curriculum, etc., required should be co-extensive with the requirements of the new English rules.

*Rules Approved.*—On 26th August 1916 the rules received the approval of the Privy Council. Thereafter a memorandum in regard to the provisions of the Act was sent to supervising authorities and medical officers of health.

*Recognition of Institutions, Teachers, and Appointment of Examiners.*—Due intimation was given by advertisement that applications would be considered.

*Recognition of Curriculum.*—The Central Midwives Board for England intimated that after 31st March 1917 they proposed to remove from their training list all institutions and persons hitherto recognised in Scotland.

Notification of this decision had been sent by the English Board to the institutions and teachers affected, and the Scottish Board thereupon invited applications for recognition to be lodged with them.

*Reciprocal Recognition as Regards Curriculum.*—The Boards have come to a reciprocal arrangement in regard to the recognition of the curriculum in the two countries.

It has been arranged that midwives receiving their training at recognised institutions in Scotland may enter for the examination in England on their schedules being countersigned by the Secretary for the Central Midwives Board for Scotland.

A similar understanding applies to midwives who have been trained in England and who desire to appear for the examination of the Scottish Board.

A list is annexed of approved institutions, and teachers and examiners appointed.

*Reciprocal Recognition as Regards Examination.*—At the present time, owing to the English Midwives Board not having similar powers, the Scottish Board are only in a position, until the end of this year, to enrol midwives who have passed the English Midwives Board's examination and desire to practise in Scotland. On the other hand, midwives passing the examination of the Scottish Board cannot be enrolled in England in order to practise there without passing the examination of the English Midwives Board. Until that Board obtains an Amending Act reciprocal arrangements in regard to examinations cannot therefore be instituted.

*Examinations.*—Regulations for the conduct of examinations and for examiners were submitted and duly approved by the Privy Council.

After intimation by advertisement the first examination of the Board was held, when seventy-seven candidates entered. The examination was conducted simultaneously at Edinburgh, Glasgow, Dundee, and Aberdeen.

The candidates made a very creditable appearance, and sixty-nine passed the examination.

*Financial Statement.*—As required by section 13 of the Act, the Board beg to submit the financial statement for the year ended 30th December 1916.

It will be noted that the work of the Board has been initiated and carried out in an effective and economical manner. A credit balance has been carried forward to next year without requiring any levy on the supervising authorities.

The Board desire to express their thanks to the Privy Council for making arrangements whereby the original grant was continued for another year in case of emergency.

*Roll.*—For the period to 31st March 1917 the number of midwives enrolled is 2026. Of these, 1957 were enrolled under the provisions of section 2 of the Act, while 69 were enrolled after passing the examination of the Board.

*English Board.*—The Board desire to take this opportunity of expressing their indebtedness to the Chairman of the English Board, Sir Francis Champneys, Bart., and to the Secretary, Mr. Duncan, for the generous help they have extended to the Scottish Board, and for the benefit of their ripe experience.

J. HALLIDAY CROOM, *Chairman.*

D. L. EADIE, *Secretary.*

50 George Square, Edinburgh,  
31st March 1917.



## OPHTHALMOLOGY.

UNDER THE CHARGE OF

W. G. SYM, M.D., F.R.C.S.E., AND ANGUS MACGILLIVRAY,  
M.D., D.Sc.

## SUBCONJUNCTIVAL INJECTIONS.

ALTHOUGH treatment by subconjunctival injection has been practised for a considerable number of years, it does not seem to have established itself as a reliable and useful therapeutic measure. In opening a discussion at a meeting of the Midland Ophthalmological Society in December 1916 (*Birm. Med. Rev.*, February 1917) Dr. Ridley, the President, thought that a discussion on the subject would prove both advantageous and instructive for the members from the practical point of view. The operation was somewhat incorrectly named. It should be intra-orbital injection, as the fluid was injected deeply into the cellular tissue of the orbit. Beyond a short notice in one of the reviews that drugs were now being administered in France, for ophthalmic diseases, by subconjunctival injection, Dr. Ridley had never heard anything of this method of treatment until Dr. Darier demonstrated his method of conducting the procedure at one of the earlier meetings of the Oxford Congress about eight or nine years ago. From the fact that several kinds of drugs were used, the original idea was to get a local effect of the drug by introducing it into the neighbourhood of the part affected, with the hope that a certain proportion would be carried directly to the site of the disease by the local circulation. In the author's opinion this hardly occurs at all, or, if so, not sufficiently to exert any valuable effect, and now most of the drugs have been discarded and a more or less uniform solution used in every case, only varying in detail according to the taste of the practitioner. He himself used a normal or slightly hypertonic solution of common salt with 1 in 5000 cyanide of mercury, the idea being, by means of the salt solution, to cause increased flow of blood, diapedesis of white blood corpuscles, and phagocytosis in the area involved, or, in other words, to cure the disease by the physiological process of locally stimulating the reaction of the blood and tissue to the organism, or whatever else it might be, which was causing the disease. In cases where it was desired to remove the products of disease, such as scar tissue or inflammatory deposit, one hoped that increased metabolism would result in a better repair than Nature's first attempt. The mercury was used simply to insure sterilisation and prevent sepsis. Darier pointed out that if the injection were simply subconjunctival great pain and chemosis were caused, and the beneficial result was not so great. He used a curved needle, and, after instilling a drop of cocaine, raised the upper lid with his finger, without a speculum,



directed the patient to look downwards as far as possible, seized the conjunctiva with forceps near the upper fornix, plunged the needle in backwards parallel with the globe, and injected about 20 minims of the solution. Dr. Ridley found it easier to direct the patient to look down and in, then seize the conjunctiva close to the outer canthus, and plunge a straight needle in backwards close to the outer wall of the orbit. With a drop of cocaine, previously instilled, and a sharp needle there was no pain in the procedure itself, but almost immediately afterwards a severe aching came on and lasted for a time, varying from twenty minutes to two or three hours. It was best mitigated by the application of firm bandages over an elastic pad of cotton-wool. He tried using a little cocaine or alpin in the fluid injected, but thought the effect was lessened, although the pain was almost done away with. Theoretically, such drugs would exert a paralysing influence on the leucocyte, which, of course, was adverse to the object aimed at. If the theory of its action advanced were correct, it was evident that there was a vast number of diseased conditions in which this method of treatment was applicable. To enumerate a few: there were all cases of retinitis and choroiditis, due to attacks of micro-organisms; irido-cyclitis, keratitis, ulcers of cornea with hypopyon, and more chronic affections, such as retinitis pigmentosa, retrobulbar neuritis, optic atrophy, and corneal scars. Some surgeons used it in detachment of the retina, though the author himself did not see the rationale in such cases, and had never seen any good results follow its application. In his clinic subconjunctival injection was used as an adjunct to other treatment, and was administered at intervals of three or four days in acute cases, such as corneal ulcers with hypopyon; but only every week, fortnight, or even month in more chronic conditions, such as retinitis pigmentosa, where the treatment could be continued for years. Fifteen to 20 minims was a convenient dose, and a course of six injections was usually given, and then the patient had a rest for two or three weeks before beginning again. In the author's experience the most astonishing results had been seen in early central retinitis, where sometimes the patch at the macula had almost disappeared and the central vision recovered in a few weeks. Great improvements had been noted, too, in tubercular and syphilitic choroido-retinitis. Their results in retinitis pigmentosa had been very encouraging in at least checking the advance of the disease, while often a most marked improvement had taken place. In old patches of keratitis, corneal scars, and even in optic atrophy, some benefit had been produced; and, in fact, it was a common thing for patients to return begging to have another course, in spite of the pain occasioned, so convinced were they of the advantage resulting. The operation was so simple that it could be entrusted to an intelligent nurse who had seen it done once or twice. Of course there was a slight danger of injury to the globe, or other orbital

contents, in clumsy hands, or of formation of abscesses; but he had never seen anything of the kind happen, or, in fact, any mischief, in the thousands of times it had been practised in his clinic. The only drawbacks were the pain, and occasionally considerable swelling and oedema of the conjunctiva and lids. The latter soon subsided on application of cold compresses.

To sum up: In the author's opinion, subconjunctival injection was a very useful adjunct to other methods of treatment, and gave some hope in cases hitherto considered beyond their poor powers to help.

Mr. E. H. Harries-Jones regarded subconjunctival injections as the mainstay of ophthalmic treatment rather than an adjunct. In macular diseases and vitreous opacities subconjunctival injections were the only form of local treatment employed, and the results were eminently satisfactory. He has been in the habit of giving subconjunctival injections far back, but does not give intra-orbital injections. Treatment of sympathetic ophthalmia by subconjunctival injections of cyanide of mercury (1 in 1000), repeated every third day, was successful. The pain was severe for about an hour and a half after each injection, but the patient was so pleased with the improvement in sight that he "asked for more." The final vision was 6—6. In serpiginous ulceration of the cornea, though the injection was very painful at first, there was no pain after the first injection, even when repeated every day. His favourite solution for injection was 2 per cent. NaCl with 1 in 1000 cyanide of mercury, and he considered it one of the best remedies used in ophthalmology.

Mr. Cridland said that as it was eighteen years since he had given his first injection—and he had given a great number ever since—he felt that he could speak with some experience, the results of which he would like to put before the meeting. The first injection he made was in 1899, using a solution of 1 in 1000 perchloride of mercury; but it was found to cause such intense pain that, after giving four in as many cases, he abandoned their use till 1903, when it was found that, by combining a solution of 1 per cent. acoine with ordinary saline solution or cyanide of mercury in the strength of 1 in 5000, the pain factor was eliminated, and patients complained of discomfort only. One of the first injections he had given was in a normal and healthy eye, experimentally with a view to noting the effects upon the conjunctiva, and, if any, upon the retinal vessels. It was observed that within twenty minutes of the injection, which consisted of normal saline solution 2 parts and 1 per cent. acoine solution 1 part, there was a distinct dilatation of the retinal vessels, notably of the veins, the latter being increased in calibre by about one-half as compared with those of the other eye. A slight further dilatation was noted up to three or four hours later, and after twelve or eighteen hours the vessels had resumed their normal calibre. Beyond the chemosis of the con-

junctiva no further change was observed. One of the first cases treated by injections of cyanide of mercury was a woman who had developed sympathetic ophthalmia nineteen years after the original injury. The vision was reduced in each eye to hand movements only. For five days she had been treated with mercury and atropine, and improvement up to 6—60 in each eye was observed; after that all treatment other than that of atropine locally was discontinued, and a series of subconjunctival injections was given, about 4 minims in each every fourth day. In three weeks the vision was raised in each eye to a good 6—9. In the same year about fifty cases of various kinds were given injections. Thus, in a series of twenty cases of interstitial keratitis so treated, some astonishingly good results in about half the cases were obtained, but in the remainder no definite improvement was noted. Cases of eczematous keratitis were also found to be much benefited, some of them in an astonishing way, whilst again, in others, as in cases of interstitial keratitis, little or no improvement was obtained. As illustrating the ease with which an injection could be given, it might be mentioned that the youngest patient in this series was a child of 5, who made no objection to their administration. In a few cases of retinal hæmorrhage of some standing, small injections were tried, but with doubtful benefit, whilst in two cases of subhyaloid hæmorrhage of fairly recent standing, unfortunate results attended their use, for within two or three days the vitreous, which was before partly clear, became quite cloudy, several large exudates being present. It was presumed that in these two cases the injection had been the cause, and had, of course, done harm temporarily. The cases subsequently cleared up, however. Speaking generally of choroidal conditions, for which this class of treatment would appear to be essentially suitable, it was found that when an exudate in the choroid was not extensive the progress of the disease was cut short, whilst in those cases where a large exudate was present, little, if any, effect seemed to be obtained. In recent macular disease, and even in those of some standing, somewhat astonishing results had been obtained, as evidenced by a very definite improvement in the vision; and when it was borne in mind how obstinate such cases, especially if of long standing, proved to be against any form of treatment, the results obtained by injections were very satisfactory. In the perimacular changes in high myopia no result was obtained. A series of ten cases of incipient cataract were treated by injections of potassium iodide, but with no definite result. All the patients stated that they could see better, but on being tested the vision remained as before. As to the drugs used, the most usual ones were saline solution or cyanide of mercury (1 in 5000), but solutions of potassium iodide, salicylate of soda, citrate of soda, and iodate of soda had also been used, being combined with 1 per cent. solution of acoine in the usual proportion. Speaking generally, Mr. Cridland was



enthusiastic as to their efficiency, the points in their favour being—(1) they certainly did good in a number of cases where nothing else in the way of general or local treatment appeared to be of the slightest avail; (2) no harm was noted in suitable cases; and (3) their administration was not painful, discomfort only being complained of.

Mr. St. Clair Roberts had used normal saline subconjunctival injections in a few cases of detachment of the retina, but had never seen any benefit result. He had tried injections of mercuric cyanide in a case of sympathetic ophthalmia, which ended in a cure, and this he attributed partly to the use of the injections. He had also tried sodium iodate in cases of choroiditis with vitreous opacities, but with no definite result.

Mr. Laws had found subconjunctival injections beneficial in septic infection of the anterior part of the globe from perforating injuries, and thought that the eye had been saved in some such cases by their means.

Mr. Adams had very little experience of subconjunctival injections. He had tried injections of cacodylate of guaiacol in a case of tuberculous iritis; the following week the eye appeared rather more inflamed, but at the end of a fortnight it was perhaps rather better.

Mr. Anderson said he had found great benefit in using subconjunctival injections of Wright's solution (4 per cent. sodium chloride,  $\frac{1}{2}$  per cent. sodium citrate) in conjunction with the subcutaneous administration of tuberculin.

Mr. Musson recorded marked benefit in three cases of retinitis pigmentosa.

Mr. Harrison-Butler said that he had not been able to convince himself of the value of subconjunctival injections. He would, however, after the glowing accounts which had been advanced by the opener of the discussion and subsequent speakers, try the treatment more systematically. He had always mixed acoine with the fluid employed, and few of his patients had experienced the pain which was described as usual. He pointed out that Bader of Basle was injecting a 1 per cent. solution of potassium chloride, which, from experimental and clinical evidence, he found to be more active than the sodium salt. Mr. Harrison-Butler had tried this injection upon two patients, but without result.

Dr. Ridley, in replying, said that no doubt many other drugs besides sodium chloride would bring about the same physiological lavage as the latter salt. Patients, as a rule, would not stand daily injections. In retinitis pigmentosa, subconjunctival injections were the only form of treatment which had given him any good results. He had found them beneficial in chronic cyclitis and sympathetic ophthalmia, which he had included under irido-cyclitis. The observation made by Mr. Cridland, that the injections produced dilatation of the retinal vessels,



suggested that we should be cautious in their use in retinal inflammations and hæmorrhages. Still, he had had two or three cases of retinal tuberculosis in which this treatment had been very successful—the vision in one case improving from L. 6—60 to 6—6, and in another case from 6—24 to 6—9. He was doubtful whether atropine did not impair the efficacy of the injection owing to its paralyzing effect on the leucocytes. It seemed possible that the beneficial effects of the injections were proportionate to the pain set up. A. MACG.

## MENTAL DISEASES.

UNDER THE CHARGE OF

JAMES MIDDLEMASS, M.D.

### SOCIAL SERVICE IN STATE HOSPITALS.

IN a number of papers read at a conference at Boston of the Massachusetts Society for Mental Hygiene, one by H. Curtis on the above subject deserves special notice (*Boston Med. and Surg. Journ.*, 24th August 1916, p. 271). In America much is being done at present to attack the problem of insanity on its preventive side. This is evidenced not only amongst other things by legislation in connection with mental enfeeblement, but by the institution of trained services placed at the disposal of the State hospitals for the investigation of all the factors, social and other, which have any relation to insanity. Much valuable work has been done and useful information obtained, which has been of great service in enlightening public opinion and guiding legislation. This social service is organised along four definite lines—(1) Home visiting or after-care. This has been found most valuable in assisting patients to get work when discharged and in removing environmental hindrances to the retention of mental health. (2) Obtaining full histories of cases when these cannot be got from the relatives of patients when visiting the hospital. This often also discovers social conditions prejudicial to the patient, as well as assists the hospital physician to a better understanding of his cases. (3) Investigation of complaints relative to patients, of applications for the boarding out of patients, and of special forms of disease, such as pellagra, etc. (4) The reference of patients to whatever organisation may be useful in aiding them on their discharge, such as charity organisations, churches, employment bureaux, etc. These aids are shown to be real by examples which have come under the writer's notice, and show how much good can be done to prevent the occurrence as well as the recurrence of mental disease. They carry out the preventive principle, which already has had exceedingly beneficial results in the case of some other diseases.

Another paper bearing on the same subject is that read by Dr. Russell, Superintendent of Bloomingdale Asylum, New York, at the meeting of the American Medico-Psychological Association at New Orleans in 1916 (*Amer. Journ. of Insan.*, October 1916, p. 157). He likewise strongly advocates making all the State asylums centres for the acquisition and diffusion of knowledge regarding mental disease and for combating it not only in the institution but in the community.

#### SYPHILIS IN ASYLUM PATIENTS.

Dr. C. S. Holbrook reports the results of an investigation of the Wassermann reaction in the blood of 1600 patients in the East Louisiana State Hospital (*Amer. Journ. of Insan.*, October 1916, p. 261). Of these 637 were white males, and 8 per cent. gave a positive reaction; 516 white females gave a 4 per cent. reaction; 212 coloured males a 7 per cent reaction; and 235 coloured females an 11 per cent. reaction. The entire white population gave a reaction in 6 per cent., the coloured in 9 per cent. The results of intraspinal medication in some of these cases are mentioned as encouraging. But at the subsequent discussion of the paper by the members of the American Medico-Psychological Association this treatment was subjected to severe criticism. In the experience of one speaker ten out of thirteen general paralytics treated died, on the average, in a shorter time than those not so treated. The only satisfactory feature was that the patients were more comfortable while they lived, but that is somewhat slender ground for satisfaction. Another speaker had a more encouraging report to give and strongly advocated the treatment.

#### THE ETIOLOGY OF CONGENITAL MENTAL DEFICIENCY.

In this paper Dr. Lind, Pathologist of the Victorian Lunacy Department, gives the results of an investigation of the histories of 317 patients in the Idiot Cottage, Kew, Victoria (*Med. Journ. of Austral.*, October 1916). It was found that in about half the cases no family history was obtainable, the relations having ceased to take any interest in them. Even in those in which a history was obtained it was found that there was a lack of family cohesion, and of knowledge about absent members. This is regarded as a characteristic feature. Study of the histories obtained showed certain facts clearly. Some so-called factors may be entirely discounted. These are consanguinity, disparity in ages of parents, extremes of age in parents, and immature birth. Some positive factors also emerged. The earlier born children are more liable to be affected than the later born. Severe illnesses early in life, before the prefrontal lobes are fully developed, also exercise a definite influence in producing mental enfeeblement. Among these diseases

syphilis undoubtedly plays no small part. The other main cause discovered was a phylogenetic degeneration, evidenced by the occurrence of tuberculosis and cancer in members of the same stock as that in which mental enfeeblement occurs.

#### SODIUM CHLORIDE SOLUTION IN DEMENTIA PRECOX.

In the treatment of dementia precox Kraepelin refers with approval to the intravenous injection of sodium chloride solution, but gives no details. Dr. Ishida gives the results of this method of treatment in ten cases (*Amer. Journ. of Insan.*, January 1917, p. 541). From 400 to 1000 c.c. of 0.9 per cent. NaCl solution were injected into the median basilic vein. In several of them the injection was followed by a mild attack of feverishness which subsided in a day or two. But after this in 50 per cent. of the cases there was distinct mental improvement, and in the others there was some mental awakening, but it proved to be transitory. An examination of the chlorine content of the blood showed a percentage in the five cases examined somewhat below what is regarded as normal, and it is concluded that the improvement shown after injection of the salt solution was presumably due to this deficiency being supplied. The conclusions drawn are, however, subject to the reservation that sedatives were given both before and after the infusion, and some of the amelioration observed may have been due to this cause.

#### BRAIN ATROPHY.

Dr. Taft directs attention to two forms of brain atrophy which produce different naked-eye results (*Amer. Journ. of Insan.*, January 1917, p. 519). In one there is an obvious widening of the sulci, in the other there is not. Photographs are given of the two kinds, and an explanation is offered. In some the corpus callosum is much thinned, and in these there is no obvious widening of the sulci. In the others there was visible widening, but no atrophy of the corpus callosum. In the latter it is suggested that the fibrous atrophy takes place in the short association fibres of the cortex which connect adjacent convolutions and which are thought to arise from cells at the bottoms of the gyri. In the former it is the fibres of the corpus callosum which atrophy, and these are considered by Déjerine to arise from cells on the summits of the gyri. In that case the tops of the convolutions are slightly flattened, but the convolutions themselves are not separated, as they are in the other form of atrophy. In both classes the clinical symptoms were those of dementia, and the form of atrophy could not be diagnosed during life. All were advanced in years and showed atheroma of the cerebral vessels. Two of the three cases which showed visible atrophy had suffered from convulsions.



## THE POSSIBLE FUNCTIONS OF THE CEREBRO-SPINAL FLUID.

In his presidential address to the Neurological Section of the Royal Society of Medicine in October 1916 Professor Halliburton makes a very useful contribution to this important subject (*Brain*, October 1916, p. 213). He first states what is at present known of its character and composition. It is an ideal saline solution, containing practically all the substances present in Ringer's and Locke's artificially prepared fluids for the maintenance of animal life outside the body. It is secreted by the cells of the choroid plexuses at a pressure which is not the result of arterial pressure, though it may follow changes in that pressure. It is a true glandular secretion. Its flow can be stimulated by excess of carbon dioxide in the blood, by drugs which interfere with respiration, by volatile anæsthetics which may act through respiration, and by an extract of the choroid or of the brain. In the last case the active principle is probably some product of nerve metabolism. The secretion is absorbed by way of the blood-stream and not by the lymph channels of the nerves. The diffusion is extremely slow in the lower spinal region, which renders the value of medication through lumbar puncture of doubtful value. It is most rapid in the subcerebellar district. The mode of its entrance into the blood-stream is probably into the venous sinuses by the microscopic arachnoidal villi. It may also occur through the thin walls of the blood-vessels within the central nervous system. Diffusion from the blood to the fluid hardly ever occurs.

He then passes on to a consideration of the meaning and functions of the fluid. It certainly serves a mechanical purpose, as a support to nervous structures. In this respect, however, it differs from ordinary lymph, which is wholly dependent on blood-pressure, and therefore variable, and it is quite probable the nervous system may require protection from these variations. It is not the same as lymph in its composition, but there seems little reason to doubt that in the nervous system it plays the same part as lymph does in other organs. It is the channel by which nutrition is conveyed to living cells and by which products of metabolism are removed from these cells though the latter has not been directly proved. In these processes not only the cells of the choroid plexuses take part, but all the cells lining the spaces which contain the fluid. In another respect it differs from ordinary lymphatic flow. In the latter there is a free flow in both directions, in the former the fluid appears to be impenetrable from the blood except for oxygen. The nutritive materials of the fluid are secreted by the cells and not simply exuded from the blood. If drugs are to influence such diseases as tabes and general paralysis they must be of such a nature that they will pass through the defensive cellular barrier, and so reach the nervous structures attacked by the disease. The small amount of protein in the cerebro-spinal fluid,



and the presence of sugar, seem to point to a means of gauging the requirements of the nervous system for suitable materials for its functional activity. These are definitely known to be much less than are necessary for some other tissues, for example, muscle. He suggests that the nervous system, considered from the developmental aspect, is rather a modification of a respiratory than of a digestive apparatus. The sensitiveness of the nervous system to carbonic acid, and its presence in high percentage in the cerebro-spinal fluid, seem to point to the former and not the latter. The function of the cilia of the ependymal epithelium is the last point speculated upon. By analogy with some lower animals it is surmised to be in the direction towards the point where absorption of the fluid takes place most rapidly—that is, in the forward regions at the base of the brain.

#### THE PENETRATION OF ARSENIC AND ANILINE DYES INTO THE BRAIN.

The subject of this paper has a relation to the preceding one, and may consequently be referred to here (*Brain*, October 1916, p. 478). Drs. McIntosh and Fildes injected solutions of various aniline dyes into rabbits' veins and killed the animals five minutes later. In certain cases the dye penetrated to the grey matter and caused a diffuse colouration, but in no case was the white matter stained, nor was there any trace of the dye in the cerebro-spinal fluid. As a result of their investigations they came to the following conclusions:—

1. Certain dye substances can pass directly from the blood to the brain substance proper without being found in the cerebro-spinal fluid, while others fail to penetrate into the brain.
2. The chief factor which governs the passage of the dyes is their solubility reactions.
3. This is a peculiar solubility and not a general lipid solubility.
4. It corresponds to a solubility in chloroform and in water, or, perhaps, to their partition co-efficients in these liquids.
5. The present-day arsenical remedies are, to some extent, inefficient in the treatment of syphilis of the nervous system, because they do not possess the necessary solubility to allow them to pass from the blood-vessels to the brain substance. Their relative inefficiency has nothing to do with their absence from the cerebro-spinal fluid.

They tried the solubility of a large number of arsenical compounds in chloroform, but found that of the few so soluble many were insoluble in water or were hydrolysed by it. The research had to be abandoned owing to the war, but the facts ascertained point in the direction towards which efforts should be made to discover compounds capable of killing organisms which have obtained an entrance into the central nervous system.

## NEW BOOKS.

*Physical Remedies for Disabled Soldiers.* By FORTESCUE FOX, M.D.  
Pp. 277. With 86 Illustrations. London: Baillière, Tindall  
& Cox. 1917. Price 7s. 6d. net.

THE war has resulted in the publication of many works dealing with the treatment of the wounded soldier, but until the publication of this work the treatment of the disabled soldier has not been adequately discussed. So much depends upon the after-treatment of the wounded that the clear exposition of physical remedies—their application and their scope—which the volume presents is of extreme value and importance at the present time. As the author remarks in his preface, physical treatment is “rather unfamiliar ground”; but the volume goes far to remedy this and to remove the obstacles which are likely to be encountered.

The concise statement of principles of remedial baths, their operation, and their suitability for the various conditions met with in war hospital practice is especially valuable, as the literature upon this special subject to date has not entered into the details necessary to make baths an important factor in the treatment of wounds and post-operation conditions.

Unlike so many books published upon various treatments, no claim is made that the remedies suggested are sufficient to the exclusion of all others; but it is pointed out how these remedies are an important aid to the ultimate restoration of disordered functions. Cases are cited and the results stated in a manner both clear and convincing. The chapter on mechanical treatment is particularly instructive, and repays the most careful study; to those entrusted with such a department this chapter is invaluable. Massage and exercise is the title of another chapter which may be read with the utmost benefit: the exercises appropriate to each of the machines described in preceding pages are detailed, and the assistance that this chapter gives to the instructor will not fail to be appreciated.

The chapter on re-education and work of the wounded soldiers emphasises the immediate urgency for dealing with this problem. In some quarters it is thought that the institution of orthopaedic workshops is a start of this scheme: theoretically it is not, for these workshops are intended primarily to expedite the cure without making provision for the patient's ultimate employment. It is to be hoped that the author's account of the work done in France will stimulate this country to immediate action in this direction.

There is no section of the volume which will not repay careful

study; and while everyone is not engaged in the particular work described, it is impossible to imagine that anyone could study this book without acquiring additional knowledge of practical value.

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*Congenital Word Blindness.* By JAMES HINSHELWOOD. Pp. 112.  
With 3 Illustrations. London: H. K. Lewis & Co., Ltd.  
1917. Price 4s. net.

THE author of this little volume has from time to time during the past twenty-two years contributed to the literature of visual aphasia. Congenital word blindness is employed to denote a condition in which there is very great difficulty in learning to read, not accounted for by a defect of vision and not associated with impairment of the other mental faculties. Dr. Hinshelwood was one of the earliest writers on the subject, and he has met with thirty-one cases during the past fifteen years. The symptom can only be explained by some form of congenital defect or lesion of the visual speech centre. Although moderately rare, the diagnosis of congenital word blindness is easy, whilst its recognition is of importance, since children so affected, as the author points out, can be taught to read if trained by appropriate methods. The last chapter of the book is devoted to the description of cases of congenital word blindness in which more than one member of a family was affected, while instances are referred to in which the defect was observed in a second generation. The advice given as to the education of these children is especially valuable.

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*The Pneumothorax Treatment of Pulmonary Tuberculosis.* By CLIVE RIVIERE, M.D.(Lond.), F.R.C.P. Pp. 186. London: Henry Frowde and Hodder & Stoughton. 1917. Price 6s. net.

THE treatment of pulmonary tuberculosis by the establishment of artificial pneumothorax is no longer a matter of experiment, but has been for several years extensively practised. The literature on the subject is so scanty that the present volume is a welcome publication. It comes from the pen of one who is well qualified for the task of indicating to the profession the scope and limitations of the new method—a method which yields excellent results if the cases are carefully selected and the technique exactly followed. Covering, as it does, the entire ground, and presenting not only the views of all authorities but also the results of the writer's own practical experience, this small manual may be confidently recommended to all who are concerned with the treatment of pulmonary tuberculosis.

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*Cancer, its Cause and Treatment.* By L. D. BULKLEY, A.M., M.D.,  
Senior Physician to the New York Skin and Cancer Hospital.  
Vol. II. Pp. 282. New York: Hoeber. Price \$1.50.

THIS book is the second of a series of lectures given to practising physicians attending the afternoon clinics at the New York Skin and Cancer Hospital in 1916, and, in its author's own words, is an endeavour to put the real cancer problem in such a light that others might follow and develop the subject in a manner fitting to the very great importance of the end in view.

The author's object is to show that cancer is largely associated with deranged metabolism. He does not believe in the possibility of the condition being due to a parasite, but says that the evidence seems certain that the cancer mass, when fully developed, secretes a hormone which tends to augment its own growth. He is against surgical treatment, but advocates (p. 157) an absolutely vegetarian diet with continuous proper medication.

We cannot, however, agree with the author in his statement that "there is no evidence to prove that climate has any influence in the production of cancer, nor is it affected by locality. The disease occurs in hot, warm, temperate, and cold climates, and in every possible location on the earth." Hoffman's marvellous collection of statistics has shown most clearly that the condition greatly decreases towards the equator. Nor can we agree with the author that cancer is due in Australia "to the gluttonous habits of immigrants who have meat for breakfast, lunch, dinner, and supper"; still less that cancer is never seen in vegetarians. One has only to refer to the cancer death-rate among the Hindoos to realise that diet is not the exclusive etiological factor.

The statistics in Australia are extremely interesting. To take, for example, the case of Sydney in the year 1906, the death-rate from cancer among males was 80.0 per hundred thousand, whereas among females in the same year the death-rate was 96.2. In 1907, on the other hand, the death-rate among males increased to 100.3 and decreased among females to 74.0. These figures are remarkable, and that there must be some cause for the variation there can be no question. Certainly the men did not become more gluttonous than the women in 1907; but what about the invasion of rats which infested the business part of Sydney to such an extent that it resulted in the burning of all the dock warehouses? In this connection Fibiger's experiment should be borne in mind.

The more one works with the etiology of cancer the more difficult and dangerous it seems to dogmatise.



## NEW EDITIONS.

*Minor Surgery and Bandaging.* By MORRISTON DAVIES, F.R.C.S.  
Sixteenth Edition. Pp. x. + 476. With 252 Illustrations.  
London: J. & A. Churchill. 1917. Price 8s. 6d. net.

THAT this book has reached its sixteenth edition shows what a useful volume it is, and how well the author keeps up to date. In this edition one new chapter has been added on the principles in treating gunshot wounds of the limbs. The book is one which should be read by every graduate about to take an hospital appointment, for one knows by experience that the many blunders made and the trials passed through as resident could have been obviated if the lessons taught in this volume had been learnt beforehand.

The author advises the use of eupad as a powder for wounds; but this advice should be qualified by adding that, unless the surrounding parts are protected by vaseline, it may be painful, and in certain patients may destroy the skin edge. The author also advises boiling silk in soda solution; but this is found to make the silk very friable and not to be depended upon. His use of novocaine—2 per cent. solution—as a local anæsthetic is not required;  $\frac{1}{2}$  per cent. is the best dilution. The chapter on anæsthetics does not mention the intratracheal method. The last chapter on war surgery is very short and fragmentary, but is quite a useful addition.

*An Index of Differential Diagnosis of Main Symptoms.* By Various Writers. Edited by HERBERT FRENCH, M.A., M.D., F.R.C.P.  
Second Edition. Pp. xx. + 911. With 343 Illustrations.  
Bristol: John Wright & Sons, Ltd. 1917. Price 42s. net.

It is not difficult to understand why this work has been twice reprinted since it first appeared in 1912, and that a second edition has now been called for. It meets, and satisfactorily meets, a want which every practitioner experiences almost daily—a ready means of recalling the less frequent causes of common clinical symptoms, and of interpreting the meaning of unusual groupings of symptoms and signs. How often, after even the most careful investigation of an obscure case, is a correct diagnosis missed because one possibility has for the moment been overlooked? By the intelligent use of this work—and in doing so the index must be fully utilised—such errors will be largely obviated. We have repeatedly tested the value of the book from various points of view, and have invariably found it useful. The names of the collaborators with Dr. Herbert French in preparing the work are sufficient guarantee of the authoritativeness of the subject-matter, and the publisher's share in the production leaves nothing to be desired.

## NOTES ON BOOKS.

MR. FRANK KIDD has put into book form a course of lectures recently delivered at the London Hospital on *Common Diseases of the Male Urethra* (Longmans, Green & Co., 1917, price 5s. net). The text is supplemented by a series of appendices, one consisting of a reprint of the evidence tendered by the author to the Royal Commission on Venereal Diseases; another is a description, with photographs, of his private clinic in Harley Street.

Mr. C. T. Kingzett has prepared an excellent little primer on elementary chemistry—*Chemistry for Beginners* (Baillière, Tindall & Cox, 1917, price 2s. 6d. net).

Those of our readers who are familiar with Italian and are interested in orthopaedic surgery will find the new journal—*La Chirurgia degli organi di Movimento*—devoted to their subject full of interesting and valuable matter. It is under the direction of Dr. V. Putti, Professor of Orthopaedics in the University of Bologna, and edited by Dr. L. Cappelli. The English agents are Messrs. Williams & Norgate.

*The Veterinary Review* (W. Green & Son, 10s. 6d.) is a new quarterly launched under the editorship of Principal O. Charnock Bradley, of the Royal (Dick) Veterinary College, Edinburgh. The first number is largely devoted to summarising recent writings on subjects of interest to the specialist in veterinary surgery as well as to the practitioner. The abstracts are systematically arranged, and should prove acceptable at this time when so many journals are inaccessible and time for reading is scarce. We cordially wish this addition to Edinburgh journalism every success.

## BOOKS RECEIVED.

- BEARD, J. Annual Report upon the Work of Medical Inspection, City of Carlisle, for the year 1916; Report on the Sanitary Condition of the City of Carlisle for the year 1916 . . . —
- FUCHS, H. E., and A. DUANE. Text-Book of Ophthalmology. Fifth Edition . . . (J. B. Lippincott Co.) 30s.
- HARMAN, N. B. Staying the Plague. . . . . (Methuen & Co. Ltd.) 1s.
- HEDDERMAN, B. N. Glimpses of my Life in Aran: Some Experiences of a District Nurse. 2s. 6d.
- HEWLETT, R. T. Pathology, General and Special. Fourth Edition . . . (J. & A. Churchill) 12s. 6d.
- LOEB, H. W. Operative Surgery of the Nose, Throat, and Ear. Vol. II. . . . . (H. Kimpton) (two vols.) 23s.
- MENDEL, J. B. Massage: Its Principles and Practice. . . . . (J. & A. Churchill) 8s. 6d.
- NEWMAN, H. H. The Biology of Twins (Mammals) . . . . . (University of Chicago Press) dol. 1.25.
- RIVIERE, CLIVE. Tuberculosis and How to Avoid It . . . . . (Methuen & Co. Ltd.) 1s.
- TRANSACTIONS of the College of Physicians of Philadelphia. Vol. XXXVIII. 1916 . . . . . —

# EDINBURGH MEDICAL JOURNAL.

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## EDITORIAL NOTES.

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**Annus Academicus  
1917-1918.**

THIS month we publish our annual Educational Supplement, which contains particulars of the Medical Curriculum in the Scottish Universities and other teaching institutions. In spite of the heavy calls made on the time and energy of the teaching staffs by the public services, it has been found possible to provide a complete course of instruction for students in all the Scottish schools.

In Edinburgh the classes open on Tuesday, 9th October, and continue till Wednesday, 19th December, when the Christmas vacation begins. On Tuesday, 8th January 1918, the classes re-open, and the winter session ends on Friday, 15th March. The summer session begins on Tuesday, 16th April, and closes on Friday, 28th June.

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**University  
Representative.**

SIR WATSON CHEYNE, Bart., has been returned unopposed as Member of Parliament for the Universities of Edinburgh and St. Andrews in room of Sir Christopher N. Johnston, K.C., retired.

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**War Honour.**

LIEUTENANT - COLONEL JOSEPH MONTAGU COTTERILL, M.B., F.R.C.S., has been awarded the C.M.G. for valuable services rendered in connection with the war.

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## CASUALTIES.

ACCIDENTALLY killed on the battleship *Vanquard*, Staff-Surgeon WILLIAM GEORGE BARRAS, R.N.V.R., on 9th July.

Staff-Surgeon Barras was educated at Glasgow and Durham Universities, graduating M.B. and C.M.(Glas.) in 1889, and M.D. in 1892. After filling the posts of assistant medical officer of health and bacteriologist to the burgh of Govan, he went into practice at Govan, Glasgow, where he was physician to the Elder Cottage Hospital.

DIED of wounds, Captain ALASTAIR GORDON PETER, M.C., R.A.M.C., on 5th July.

Captain Peter was educated at King's College, London, and at Aberdeen University, where he graduated as M.A. in 1898, and M.B. and Ch.B. in 1903. He was in practice at Inverness before he took a temporary commission in the R.A.M.C.

DIED of wounds, Captain HAROLD EMERSON ROSE, R.A.M.C., on 7th July.

Captain Rose was educated at Cambridge and at Edinburgh, and took the Scottish Triple Qualification in 1913. He joined the Special Reserve of the R.A.M.C. in September 1914. He was attached to the Coldstream Guards when he met his death.

DIED on service, Lieutenant AMBROSE ATKINSON, R.A.M.C., on 7th July, aged 57.

Lieutenant Atkinson was educated at Leeds Medical School, and took the diplomas of M.R.C.S. in 1884, and the L.R.C.P.(Edin.) in 1892. He resided at Harringay, North London, till he recently took a temporary commission in the R.A.M.C.

DIED on service, Captain IAN MACFARLANE, R.A.M.C., at Cairo, on 18th July.

Captain Macfarlane was educated at Edinburgh University, where he graduated M.B. and Ch.B. in 1911. He worked for some time as medical missionary at Nazareth, but had to leave Palestine when Turkey entered the war. He took a temporary commission in the R.A.M.C. on 14th April 1915. He was recently in charge of a military hospital near Gaza.

DIED of wounds, Lieutenant BENJAMIN COHEN, R.A.M.C.; reported in casualty list of 13th July.

Lieutenant Cohen was educated at the University of Glasgow and St. Bartholomew's Hospital, and took the degrees of M.B. and Ch.B.(Glas.) in 1913. He was honorary medical registrar at the New Somerset Hospital, Cape Town, before taking his commission in the R.A.M.C. in November 1916.

DIED on service, Lieutenant JOHN SUTHERLAND MUNRO, R.A.M.C., at the Officers' Hospital, Baghdad, on 16th July.

Lieutenant Munro was educated at Edinburgh University, where he graduated M.B. and Ch.B. in 1916. He took a temporary commission in the R.A.M.C. in January 1917.

DIED on service, Lieutenant SAMUEL CHARLES ELLISON, R.A.M.C.; reported in the casualty list published on 26th July.

Lieutenant Ellison was educated at the Universities of Belfast, where he gained a medical scholarship, and of Edinburgh, where he graduated



M.B. and Ch.B. in 1902, and M.D. in 1904, after which he went into practice at Small Heath, Birmingham. He had only recently taken a temporary commission in the R.A.M.C.

**KILLED** in action, Captain GEORGE STEPHEN PIRIE, R.A.M.C., on 24th July.

Captain Pirie was educated at Edinburgh University, where he graduated M.B. and Ch.B. in 1914. He had served in Gallipoli, where he was wounded, and since December 1915 in France. He had twice been mentioned in dispatches. He was attached to the East Surrey Regiment when killed.

**DIED** on service, Major JAMES AITKEN, R.A.M.C.(T.F.), at Yorkhill Military Hospital, Glasgow, on 29th July.

Major Aitken was educated at Glasgow University, where he graduated M.B. and C.M. in 1891, after which he went into practice at Ilford, Essex. He was attached to the 1st East Anglian (Norwich) Brigade of Royal Field Artillery.

**DIED** on service, Captain ROBERT HUGH DRENNAN, R.A.M.C., at Gravesend, aged 51.

Captain Drennan was educated at Edinburgh University, where he graduated M.B. and C.M. in 1892. He was in practice at Gravesend till he took a temporary commission in the R.A.M.C.

**KILLED** in action, Surgeon STEWART NEWNHAM TOULMIN, R.N., on 2nd August, aged 25.

Surgeon Toulmin received his medical education at the University of Edinburgh. After serving as a surgeon probationer on a destroyer for six months he obtained leave to sit for his final examination, and took the Scottish Triple Qualification in 1915.

**KILLED** in action, Major ALFRED JOHN MARTINEAU, F.R.C.S., Royal Garrison Artillery, on 17th April.

Major Martineau was educated at St. Thomas' Hospital, taking the M.R.C.S. and L.R.C.P.(Lond.) in 1895, and also the F.R.C.S.(Edin.) in 1899.

**KILLED** in action, Captain ROBERT DUNLOP BLACK FREW, R.A.M.C.(T.F.), on 3rd August, aged 32.

Captain Frew was educated at the University of Glasgow, where he graduated M.B. and Ch.B. in 1908, and M.D. in 1912. He was tuberculosis officer to the borough of Wallasey before war broke out.

**KILLED** in action, Captain ALFRED SQUIRE TAYLOR, R.A.M.C., on 31st July, aged 28.

Captain Taylor was educated at Edinburgh University, where he graduated M.B. and Ch.B. in 1914. At Edinburgh he was President of the

University Union and captain of the University Rugby football fifteen. He was attached to the Highland Light Infantry when killed.

**KILLED** in action, Captain BENTLEY MOORE HUNTER, R.A.M.C. ; reported in the casualty list published on 15th August.

Captain Hunter was educated at Glasgow University, where he graduated M.B. and Ch.B. in 1909.

**KILLED** in action, Lieutenant ANDREW BEACONSFIELD ROSS, R.A.M.C., on 6th August.

Lieutenant Ross was educated at Edinburgh University, where he gained the Vans Dunlop Scholarship in Surgery and Physiology ; he graduated M.B. and Ch.B. in 1902, and M.D. in 1906.

**DIED** of wounds, Captain R. L. HENDERSON, A.A.M.C. ; reported in the casualty list published on 16th August.

Captain Henderson was educated at Edinburgh University, where he graduated M.B. and Ch.B. in 1903. He was in practice at Crow's Nest, Queensland, before joining the Army.

**DIED** on service, Captain DAVID ARTHUR, M.C., I.M.S., when a prisoner of war at Entelli, in Asia Minor, on 31st July, aged 32.

Captain Arthur was educated at Glasgow University, where he graduated B.Sc. in 1905, and M.B., Ch.B. in 1907. He was twice mentioned in dispatches, and was gazetted as a recipient of the Military Cross on 19th October 1916.

**DIED** on service, Captain HENRY YOUNG CAMERON TAYLOR, R.A.M.C., at Bexhill, on 25th August.

Captain Young was educated at Edinburgh University, where he graduated as M.B. and C.M. in 1896, also taking the F.R.C.S.(Edin.) in 1905. He served as a civil surgeon in the South African War, and on his return went into practice at Bexhill.

#### MEDICAL STUDENTS.

**NISBET**, JOHN STEWART, Private, R.A.M.C., died of dysentery in East Africa on 17th July, aged 22. He was a medical student at Glasgow University in 1914-15.

**TULLOCH**, JOHN, Private, Royal Scots, reported missing on 15th September 1916, now presumed killed on that date, aged 21. He was a medical student at Edinburgh University before joining the Army.

## PYORRHŒA ALVEOLARIS.

By J. H. GIBBS, F.R.C.S.(Edin.).

THE disease known as pyorrhœa alveolaris was recognised and described by early writers on pathology, such as the great Hunter; but it was Dr. Riggs, an American dentist, who first drew wide attention to it in the middle of last century, and, as a consequence, it became commonly known as Riggs' disease. Within recent years it has been recognised to have more than local importance, and so far has the swing of the pendulum gone that many attribute to its malign influence almost all the ills to which flesh is heir. The subject is a very large one, and so I shall only bring to your notice some features of it that have a direct bearing upon our clinical work.

Unfortunately, even the ætiology of the condition is not agreed upon, and so rational prevention and treatment are still under dispute. The disease is an extremely common one; so much so, that there are very few people over 20 years of age who do not exhibit some phase of it, and from this mass of clinical material it is easy to arrive at some general conclusions.

1. Unlike dental caries, which is uncommon in "native" races, pyorrhœa alveolaris is probably as common in them as in civilised; but it varies in different native races, and its incidence has not been worked out with anything like the thoroughness with which that of dental caries has.

2. It is very common in domesticated animals and in animals in zoological gardens and menageries, whilst it is almost unknown in wild animals and in domestic animals that are fed naturally.

3. The disease has increased enormously in civilised countries during the last few decades, and in this country it is so common that continental caricaturists invariably depict the Britisher with long, ugly, displaced incisors, exhibiting pyorrhœa in its last stages.

4. The disease apparently always starts from without (at the gum margin) and especially where food is apt to lodge and decompose—in the gingival trough at the necks of the teeth.

5. Inefficient mastication, whether the result of pre-existing disease rendering the teeth too painful to use, or of the food being too refined and soft, is a very powerful factor, probably the most powerful factor, in its ætiology.

6. Marginal gingivitis having been set up, infection with

organisms rapidly follows, with destruction of tissue and the formation of pus.

7. A rarefying osteitis, commencing at the inner margin of the sockets, quickly follows, with the tendency to complete destruction of the bone, with loosening of the teeth, and copious pus formation.

8. Lime salts from the pus become deposited on the roots of the teeth, at first around the necks just under the gum margin, and later, on the deeper parts. This in itself acts as an irritant, and so a vicious circle is set up, which must be broken before a cure can be effected—the tartar causes ulceration, which produces more pus, which forms more tartar, and so on.

Pyorrhœa alveolaris causes a far greater loss of teeth at the present day than does dental caries and, apart from the greater *role* it plays in the causation of disease, is really a far more serious condition even from the dentist's standpoint; for likening the involved teeth to houses, it may be said that pyorrhœa alveolaris seriously menaces the whole superstructure by attacking the very foundations, whilst dental caries is only like a defect in the roof. It is consequently most important that we should discover the essential factors in its aetiology and become skilled in recognising the first signs of it, and adopt every means of prevention and cure. It is to be remembered that the disease is a very chronic one, and that the patient usually has the beginnings of it for years before there are any symptoms to draw his attention to it. Unfortunately, too, the dentist is very prone to overlook the earliest manifestations, just when their recognition and proper treatment are all-important.

In the early stages the free margins of the gums, and especially the interdental papillæ, become slightly swollen and congested, and soon begin to bleed slightly when brushed, and later on, without any obvious cause. Nodules of tartar, dark green in colour, can probably be detected with a fine, sharp probe on the approximal surfaces of the teeth, just under the margin of the gum. The hyperplastic interdental papillæ sooner or later undergo atrophy, and food is apt to lodge in the spaces between the teeth and act as a further irritant. Rarefaction of the bone and ulceration of the pericementum follow, and may be much more rapid than atrophy of the gums, so that deep ulcerating pockets are formed around the teeth, but especially between them. The gums, which may have receded to a certain extent, are deeply congested, rounded off, and bleed readily. Pressure on the gum with the pulp of the finger,



even in the early stages, will often expel a bead of pus, and in the later stages, pus may be constantly welling up. The teeth become progressively looser, until one by one they are thrown off, and it is of interest to note that at that spot the disease is then spontaneously cured. In the late stages, especially when many teeth are affected, superficial glossitis and inflammation of the tonsils and pharyngeal mucous membrane are often present, whilst in both jaws extensive necrosis of the alveolus may occur, and the destruction may involve the maxillary antrum. The breath in the later stages often becomes very offensive, and the patient may complain of a disgusting taste, especially in the morning, and of blood staining the pillow.

Considerations of time prevent my discussing the morbid anatomy of the condition, macroscopic or microscopic, but something must be said about its bacteriology, owing to the importance that has been so largely attached to it as an ætiological factor. Strangely enough, the bacteriology has been worked out almost wholly in cases where the disease is at an advanced stage, and consequently the findings are of very little value, considering the certainty of a mixed infection in the mouth. Goadby investigated a number of early cases and found practically the same flora as in the late stages, three or four organisms being almost always present, with a large number of less constant ones, and more recently the bacteriological findings have led him to suggest that milk is the source of the organisms and possibly of the disease. Still more recently it has been suggested in America that the specific organism is an amœba, to which the name *Endamaba buccalis* has been given; but it is now recognised that the amœba is probably present in not more than 70 per cent. of cases, so that, if it really plays any special part in the disease, it cannot be of primary importance. Of course this objection has been met by saying that there are at least two distinct forms of pyorrhœa alveolaris—one due to the amœba and the other not!

As has already been said, there is much difference of opinion as to the ætiology of the disease; but there is no time now to put before you the conflicting views that are held about it. It will serve our purpose if I briefly state the views that are largely held in this country, and which I think are fairly correct. When one takes into consideration its distribution in man and animals, the enormous increase during the last fifty or sixty years, its mode of onset and distribution in many mouths, the unsatisfactory bacteriological findings, and last, but not least, the results of

treatment, both preventive and remedial, one can arrive at some fairly sure conclusions. In the first place, it is essentially a local lesion, and any part taken by constitutional states is quite secondary in importance. First of all, a marginal gingivitis is set up by stagnation and decomposition of food around the necks of the teeth and especially between the teeth. Organisms proliferate, toxins are formed, and the destructive tissue changes incidental to the disease progressively occur. Anything then that favours marginal gingivitis predisposes to pyorrhœa alveolaris, such as irregular teeth, mouth-breathing, functionless teeth, imperfectly fitting artificial crowns, and poor fillings which allow food to lodge, and partial artificial dentures. All these conditions, however, would have but little effect apart from the nature of the diet, which is the chief factor in producing the initial injury to the gum margin. The teeth are covered by enamel, which is one of the hardest substances in Nature, and they are adapted for correspondingly hard work, and before the modern methods and mania for refining food and cooking it until it is a soft, pulpy mass became the fashion, they got at least comparatively hard work. The gums, too, shared in this hard work, which they require, just as much as the teeth do, to keep them healthy. At the present day it is almost impossible to get food that requires mastication, even if we want to, and it is almost unnecessary to say that not one person in a hundred does want to. In a previous paper I emphasised the fact that to bite and chew is just as much an instinct in the teething infant as to peck is in a newly hatched chick. The general practitioner and children's specialist, however, take good care to eradicate this wholly beneficent instinct by making the child lazy (and ill) through prescribing at weaning time and after, a diet of slops, and taking every means to prevent the child from using its newly acquired grinders. Just one quotation from Goodhart and Still's *Diseases of Children*. In the section dealing with the diet of a healthy infant it is stated that "after two years, meat may be given daily, and fine mincing must be substituted for pounding." Remember that the child at this age has all his milk teeth. A little further on, stress is laid on the necessity for thorough mastication, and the rule is laid down that "some reliable person must be always present to see that the food is taken leisurely and properly masticated." Can you imagine, gentlemen, any more refined and senseless cruelty than finely to mince a child's food so that it calls forth no stimulus to mastication, and then to set "some reliable person"

over him to insist that he shall masticate what does not require mastication and, as a matter of fact, cannot be masticated? The result is that the teeth of millions of children decay yearly, and of those mouths that escape this fate, a very large number, by the age of 12 or 15, show definite marginal gingivitis. The patient may be one of the comparatively small section of the community that attends a dentist regularly or irregularly, but this will avail him little, for the average dentist never notices such a trivial matter as marginal gingivitis—indeed, it is often difficult to make him diagnose and treat a case of *pyorrhoea alveolaris* that has been making headway for years under his very nose, until, in the last stages, the patient's teeth actually drop out, when he will apathetically acquiesce in the patient's own diagnosis that he is suffering from "*pyorrhoea*."

From an aetiological aspect, the bacterial infection is probably of quite secondary importance; but once the disease is started as a result of injury, arising solely from stagnation through want of use, the destruction of the tissues and aggravation of the primary condition by the infection is of the greatest importance. Another very significant point as regards aetiology is the fact that the disease in the early stages can usually be easily cured simply by restoring the teeth, and, incidentally, the gums, to their normal functional activity; and in cases where secondary factors, such as irregularity of the teeth, preclude the possibility of cure, the disease can at least be kept in abeyance and harmless for many years. By the time that the average dentist and patient diagnose the condition, the disease is long past curing; and although remedial agents may make the progress slower, the prognosis is hopeless.

Just a few words to indicate rational treatment. The disease, like dental caries, is easily preventable both in animals and man; and the remedy is beneficial, not only locally, but to the whole animal economy. It is simply a matter of giving the teeth and gums full physiological activity, but nowadays this is easier said than done. Owing to the modern craving for refined, soft, fully cooked food, which has been amply responded to by the manufacturer and cook, it really is a difficult matter to find food that requires mastication before it can be swallowed. It is of no use to tell children, or adults for that matter, to chew their food when it is presented in such a sodden condition that the normal stimulus to mastication is absent. It is essential that the child should masticate from the time he gets his teeth. For this purpose we



advise oatcake in preference to porridge, Swedish bread, and our own bread baked into rusks by putting the slices into the oven for about an hour, until they are a biscuity or light yellow colour throughout. Another important matter is not to cheat the front teeth of their functional activity by using a knife to cut up the food—hard and tough crusts, etc., should be bitten through and not cut. In the same way fruit, such as an apple, whether peeled or not, should be bitten and not cut, and then should be chewed until it is pulped. All fresh fruits and nuts are beneficial and so are salads. Of course the ideal time to drink is quite between meals, but to insist on this would introduce difficulties, and so fluid should be taken at the end of the meal.

Remedial treatment to be effective must be instituted early—in the stage of early marginal gingivitis. Every microscopic piece of tartar must be removed, and the patient told that whether he keeps his teeth or not now depends wholly upon his using them efficiently and avoiding soft, sticky, sweet food, that so readily ferments at the margins of the gums. Careful and proper brushing of the teeth and gums is distinctly helpful, but, as commonly used, the tooth-brush is a very questionable aid. The brush should be as small as possible, with fairly stiff bristles cut of unequal length, so as to present a saw-edge. The faces of the teeth should not be brushed across at all, as this does no good, and almost always does much harm in the long run. The rule is “Brush the gums on to the teeth” by a rotatory movement of the brush on its long axis. The lower teeth are therefore brushed upwards and the upper teeth downwards, the brush being lifted clear of the gums and teeth for the return stroke or movement. In this way sticky food is swept away from between the teeth as with a tooth-pick, which is also useful. Tooth powders and all alkaline dentifrices are harmful. The best artificial aid of that sort is a saturated solution of bitartrate of potash, which is distinctly beneficial.

In the later stages much can still be done to keep the process in abeyance by affording complete drainage, *secundum artem*, to any pockets that have formed, and by periodical visits to the dentist for thorough removal of any calcareous deposits.

At all stages any functionless teeth should be removed, and, in the late stages, when the teeth are getting loose, the sooner they are removed the better, both from the standpoint of general health, and because better alveolar ridges will be left for artificial teeth, which must inevitably come. All sorts of specific treatments



come and go, and they need not be discussed further than to say that, in my opinion, neither vaccines nor the newer emetine treatment, based on the idea of an amebiasis, are of the slightest value.

Before concluding, let me say a few words about pyorrhoea alveolaris as a cause and a complication of disease elsewhere. In the same way that all the ailments and illnesses of children during the period of teething are commonly attributed to that process, simply because it is the most obvious, and to the fond parents, the most interesting process that is going on at the time, so in adult age a dirty, septic mouth can so easily be considered the cause of gastro-intestinal disturbances and of their sequelae. We have to remember that the improper diet that has set up pyorrhoea alveolaris also sooner or later, and usually later, sets up various symptoms of gastro-intestinal disturbances, and these in their turn give rise to further metabolic disorders. I believe that in very many cases in which pyorrhoea alveolaris is blamed as the chief aetiological factor in disease, it is primarily a concomitant; but, naturally, when the pericemental membrane is ulcerated, and pus and toxins are formed, it probably greatly aggravates any other disease with which it is associated. The area of this ulceration is often not appreciated. Supposing a patient has twenty-four teeth, averaging an inch in circumference at the neck, and that the pockets around them average a quarter of an inch in depth, we get an ulcerated area of about 6 square inches, which, if it occurred elsewhere on the body, would excite disgust and be promptly treated. Although I think that the importance of pyorrhoea alveolaris, as an exciting cause of many of the diseases that are directly attributed to it, is rather over-estimated, no one can doubt its importance as a factor in hindering recovery and in aggravating the illness of the patient. Unfortunately, pyorrhoea alveolaris is from first to last almost always a painless condition, and the patient is often extremely pleased with his or her teeth, and before consenting to part with them may demand some sort of assurance that his health will materially and rapidly benefit if the teeth are extracted. No such assurance should ever be given; but the patient should be plainly told that, if the mouth cannot be kept physiologically clean, a very little sepsis may absolutely vitiate any other attempts at treatment. We have all seen cases where the removal of oral sepsis by extraction of teeth or other treatment has brought about a most striking and rapid improvement in a patient's health, which has not responded to any treat-

ment hitherto. On the other hand, one meets with just as many cases that do not seem to benefit at all, or at any rate for a long time; but even then there is nothing to regret and everything to be thankful for if the patient, by losing a lot of dirty, functionless, potentially dangerous teeth, has been afforded a great chance of improvement. My experience has led me to such an appreciation of the importance of a physiologically clean mouth that I maintain that anything and everything that makes this impossible should be removed. At the same time there is nothing more wicked than to extract a patient's teeth when there is no need for it, and I regret to say that at the present time there is a great deal of this going on. Nevertheless, if there be any reasonable doubt as to the health of the patient's mouth, the doubt should be cleared up, even if it means sacrificing a tooth.

When looking in the mouth for the possible cause of disease, whether local or general, it must be remembered that pyorrhœa alveolaris is not the only cause of oral sepsis, and that a mouth that to an unskilled observer may appear clean and healthy is often very far from being so. It would probably astonish you to know what a number of beautiful crowns and fillings have dead and septic pulps under them, with abscesses at the ends of the roots, which may give no sign of their presence externally. Because, however, a number of crowns and even fillings are surgical atrocities, do not therefore be unreasonable and condemn them one and all. In these cases and in pyorrhœa alveolaris skiagrams are of the greatest value in gauging the extent and seriousness of the pathological condition.

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## ON THE TREATMENT OF YAWS BY SALVARSAN AND ALLIED REMEDIES.

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IN the statement which follows are embodied the results of extensive observations in the treatment of yaws, and more especially those obtained by the use of one or other of the "salvarsan" products, during a period of twelve months ending 31st December 1916.

The remedies used included novarsenobenzolbillion, arsenobenzolbillion, kharsivan (B. & W.).

*Number of Cases and Sex.*—A total of 182 cases were treated,

namely, 107 males and 75 females. All the cases were Fijians, with the exception of one half-caste patient from Aquara Island.

*Age.*—The ages of the patients ranged from 4 months to about 65 years, as per the table given below :—

Under 12 months . . . . .	3 cases.
From 1 to 4 years . . . . .	19 „
„ 4 to 8 years . . . . .	17 „
„ 8 to 12 years . . . . .	12 „
„ 12 to 15 years . . . . .	6 „
„ 15 and upwards . . . . .	125 „
Total . . . . .	<u>182 cases.</u>

*Type of Cases.*—The patients all suffered from various undoubted manifestations of yaws and frambæsia, as may be seen from the following table :—

Secondary yaws or “coko” . . . . .	30 cases.
Tertiary yaws . . . . .	152 „
Total . . . . .	<u>182 cases.</u>

The cases of “coko” or secondary yaws all occurred among children under 7 years of age, mostly among those between 1 and 3 years old. There was one solitary exception—that of a boy of about 12 years of age, who was suffering from well-marked and extensive condylomata about the anus and scrotal regions. No less than 8 of the 30 cases showed well-defined and extensive condylomata about these areas, resembling exactly similar lesions seen in Europe among patients suffering from syphilis.

The various manifestations of tertiary yaws were distributed as per the table given below :—

Gummatous ulceration . . . . .	14 cases.
Soki on soles of feet . . . . .	20 „
Ulcers combined with soki . . . . .	3 „
Pains of the bones and joints only . . . . .	3 „
Bone pains combined with ulcers . . . . .	36 „
Bone pains combined with soki on feet . . . . .	7 „
Naso-pharyngeal ulceration only . . . . .	3 „
„ „ with bone pains . . . . .	3 „
„ „ with soki . . . . .	1 case.
Gummatous ulceration, dactylitis, and bone pains . . . . .	1 „
Ulcers, bone pains, and soki . . . . .	1 „
Total . . . . .	<u>92 cases.</u>

The duration of these affections was given as from 4 months in a few cases to 35 years and more, the latter being certain old men who claimed to have suffered from "soki" since youth. Many of these men had been incapacitated for years from much walking on account of the great pain produced by the soki on the soles of their feet when they tried to do so.

The various forms of "salvarsan" products used were distributed as follows:—

Novarsenobenzolbillon . . . . .	44 cases.
Arsenobenzolbillon . . . . .	49 „
Kharsivan (B. & W.) . . . . .	89 „
<hr/>	
Total . . . . .	182 cases.

*Technique.*—The technique employed was as follows:—Each dose of the drug, as supplied in vials containing 0.6 grm., was put into a 2-oz. glass-stoppered, wide-mouthed bottle, which had been previously sterilised. To this was added 9 c.c. of warm, well-boiled water (rain), and the bottle well shaken until a perfectly clear solution was obtained. Each cubic centimetre of the solution contained 1 gr. of the drug, which much simplified the gradation of dosage among patients of such very different ages as I had to deal with. Often I prepared sufficient of the drug by mixing six vials in each of the bottles with 9 c.c. of boiled rain water for each vial, so as to allow me rapidly to inject a number of patients. For lack of any other I used an antitoxin, all-glass syringe, graduated to 20 c.c., and fitted with a platinum-iridium needle, and a smaller all-glass 40-ml syringe, fitted with the usual steel needle, this latter being used for infants and young children. Platinum-iridium needles when obtainable are much preferable.

The patient was made to lie flat on his stomach, and the buttocks bared. A site situated on the outer and upper aspect of one buttock was selected and painted over with tincture of iodine. As soon as this had dried, the skin over the painted area was put on the stretch and the needle plunged sharply into the muscle. If no blood flowed out, etc., the glass barrel, containing the amount of the drug required for that patient only, was now connected to the needle, and the fluid very slowly injected into the muscle. This was much facilitated by telling the patient to keep the buttock quite relaxed. On withdrawing the needle the puncture was sealed with a small piece of cotton-wool and



collodion. All the needles, syringes, and bottles used were previously sterilised by boiling for half an hour at least.

*Dosage.*—The dose administered depended on the age of the patient. All the infants under 12 months received 1 c.c.; from 1 to 4 years, 2 to 3 c.c.; from 4 to 8 years, 3 to 5 c.c.; from 8 to 12 years, 5 to 6 c.c.; from 12 to 15 years, 6 to 8 c.c.; from 15 and upwards, the full dose of 9 c.c. or 0.6 gm.

*Results.*—No complications were noted in any of the cases done; not even an abscess was seen. The doses were extremely well borne by young and old. The intramuscular injections of arsenobenzolbillion and kharsivan always caused considerable pain at the time; but by immediately commencing the application of hot cyllin foment, 1 to 400, or carbolic, 1 to 50, and renewing these frequently, the patients obtained considerable relief, so that even the children did not cry. The injection of the novarsenobenzolbillion was much less painful, and many of the patients complained that the new medicine was not much good because they had so little discomfort that they were able to return to their work. As a rule, it was found necessary to keep up the hot foment for at least two days in those patients who received arsenobenzol or kharsivan. Many of those who received novarsenobenzol did not use them at all, as the discomfort was so small.

The results obtained with arsenobenzol and kharsivan given in the above doses were most gratifying, and similar to those recorded by observers in other places where this treatment of yaws has been undertaken.

The most striking results may perhaps be observed in the children suffering from the secondary form or "coka," when one can almost watch and detail the changes which result in the complete disappearance of an extensive and repulsive eruption within a few days.

The results obtained with novarsenobenzol were less satisfactory in the long run, though the immediate effects appeared to be brilliant. This was partly due to insufficient dosage, in my opinion, as, owing to the very large number of applicants for treatment, I was obliged to use the novarsenobenzol in the same doses as recommended for arsenobenzol and kharsivan, whereas, for every 0.6 gm. of these latter, at least 0.9 gm. of novarsenobenzol should be used.

The majority of patients have only required a single dose to effect the complete disappearance of the lesions complained of—

180 out of 182 cases. In a considerable number of cases, however, recurrence of the trouble was subsequently noted, more especially among those patients treated with novarsenobenzol.

The following table may be of interest :—

Drug Used.	Number Treated.	Number of Relapses.	Percentage of Relapses.
Novarsenobenzol .	44	7	15.99
Arsenobenzol .	49	0	Nil.
Kharsivan .	89	2	2.24
Totals .	<u>182</u>	<u>9</u>	<u>4.94</u>

In five of the above 9 patients who relapsed, a dose of arsenobenzol or kharsivan was subsequently given with the happiest results.

The period that elapsed between the apparent cure of the patients' manifestations and their subsequent recurrence varied as follows :—

3 months .	.	.	.	.	1 case.
4    " .	.	.	.	.	1   "
5    " .	.	.	.	.	1   "
9    " .	.	.	.	.	4 cases.
10   " .	.	.	.	.	2   "
Total .	.	.	.	.	<u>9 cases.</u>

*No other Treatment.*—It may be as well to state that no other treatment whatever was adopted in any cases apart from the intramuscular injections of the drugs named. Thus no dressings whatever were used for ulcers, nor local applications for soki on the soles of the feet, a system of therapeutics that appeals most powerfully to the Fijian race, who usually prefer to endure the most awful complaints and discomfort rather than take a little care and trouble necessary to get rid of the same.

The demand for the drug is always far in excess of the supply, and it is safe to say that, if a sufficient supply were available, yaws would soon be completely eradicated in Fiji, provided that each patient could get at least 2 or 3 injections.

WRITER'S CRAMP AND ALLIED AFFECTIONS: THEIR  
TREATMENT BY MASSAGE AND KINESITHERAPY.\*

By DOUGLAS GRAHAM, M.D., Boston, Mass.,

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OVER-USE of any group of muscles and nerves, especially in fine work requiring a high degree of delicate co-ordination of individual movements and voluntary impulses, as in writing, sewing, knitting, watchmaking, playing the piano, harp, or violin, etc., gives rise to similar disturbances. So do also, but less frequently, excessive use of muscles in heavier occupations, such as painting, telegraphing, tailoring, shoemaking, blacksmithing, milking, etc., occasion like troubles of motion and sensation. Predominance of symptoms may be of a spastic, tremulous, or paralytic form, with extreme fatigue, pain, formication, hyperesthesia or anesthesia, and thrills like electricity. There may be total inability to perform the accustomed movements, or if they be attempted for a few minutes, the symptoms just named appear. The spasms may be of flexors or extensors—there may be rigidity or contraction of the muscles, local or general tremor. No two cases are exactly alike, as these symptoms are variously combined, and usually only called forth on attempting the work that has brought them on, while for all other purposes the hands and arms are well. As I predicted some time ago, we can now add another form of cramp to the list, namely, manipulator's cramp, as the penalty of those who try to do massage without knowing how, and the sufferer supposes that the trouble in his arms is owing to his having imparted so much "magnetism" out of them to his patients—his conceit not allowing him to think that he is only suffering from an unnatural, constrained, and awkward manner of working.

We see but few cases of writer's cramp nowadays, and hear very little about it. Sufferers from this consider it a foregone conclusion that nothing can be done for it and soon learn to use a typewriter or hire someone who can. Physicians, by their disbelief in the efficacy of any treatment whatsoever, have done much to foster this state of mind in their patients.

First and foremost as to the predisposing causes of writer's cramp: it usually occurs in those who are somewhat neurasthenic, and who write in great haste from the wrist, using the hand and

\* Read before the Massachusetts Therapeutic Massage Association, 1st June 1917.

fingers almost entirely for this purpose, and not combining the forearm and upper arm in the side-to-side movements, as they ought to do. The fingers, hand, and arm are generally perfect and powerful for every other purpose, sometimes unusually so, and objective symptoms are said to be lacking. Are they? The writer has seen quite a few cases of writer's cramp, and in every one the space between the lower end of the bones of the forearm and the carpal bones has been unusually large—in other words, there has been too long a neck to the wrist. This favours the pernicious habit of moving the hand alone from side to side, thus obviating the healthful combination of fore- and upper-arm in these side-to-side movements.

In order to get a case of writer's cramp well, it is largely a question of removing the fatigue, the over-excitation, the irritability which accompany it, as well as a re-education in proper ways of writing. This involves a careful consideration of many things—the method of holding the pen, of forming the letters, the height of the desk and the position of the patient thereat, the state of the eyesight, of the nerves and muscles, etc. With some patients a long period of rest would seem to be necessary before commencing treatment; others can be kept at their writing and improve by the following methods:—They should be taught how to hold the pen easily and not to grasp it tightly, and be shown how to vary the methods of holding the same, if they have not already found out for themselves. Holding the pen between the fore- and middle-fingers is one of the best methods for relief. The penholder should be of as large a size as will afford a comfortable grasp, and may be of cork or surrounded by a rubber pneumatic appliance at the lower end. The pen should be neither too soft nor too hard, the point of medium size, and the paper neither too smooth nor too rough, in order that a proper resistance may be offered, so that the patient's attention may not be distracted thereby. The height of the desk should be on a level with the forearm when the upper arm hangs free by the side. It is often advantageous to change the angle of the paper from time to time, so that the patient may not get tired out from being too long in one position. Writing on a large book on the knees is sometimes easy, as it forms a good automatic tip-table instantly adjustable in any direction. The light should fall upon the paper in such a way as not to cast a shadow either from in front or on the right side.

Fine complex movements that are the last acquired are the



soonest lost. Therefore, re-education leading back to these should be gradually begun by teaching the patient to make long parallel lines from left to right, and sometimes also from right to left. This is a good preparation of the upper arm for freehand writing. After this the patient should be taught to make whole lines continuously of large *l*'s, with wide interspaces, and also the reverse of these, with equally as large spaces—*m*'s and *n*'s. These may be done either slowly or rapidly so as to break up the habit that the patient may have acquired. With improvement and facility in execution they should be gradually decreased in size. The advantage of this is that it trains upper arm and forearm to co-operate with the hand in those movements that are so necessary for easy writing. Later, a combination of letters and words must be devised to get the patient over any special *hitches* he may have. The word *legacy* offers a good combination for this purpose. After having made *l*'s for a while the patient can then practice *lelelele* until it becomes easy; then *legleglegleg* continuously, until this can be done with great ease, and so on to the end of the word.

When the patient has become somewhat proficient in writing an excellent exercise is to write the capital letters of the English alphabet connectedly as far as he can. He can usually go from A to I without a break. The writer, after having devised and employed this combination for years, found that Professor Zabłudowski of the University of Berlin had independently and unknown to either of us been doing the same thing. Exercises of flexing and extending and separating the fingers, gradually increasing in vigour and duration, should be done three times daily, and for any one predisposed to writer's cramp these exercises form a good preventive measure.

Careful and skilful massage of the fingers, hand, and fore- and upper-arm, and also of the upper part of the back should be done daily for a while at first, and later every other day. It should not be that kind of massage that is so prevalent and consists mainly of allowing the hand and fingers to slip on the surface, but deep and searching and gentle, without chafing the skin or bruising the muscles. Alternating with the massage every few minutes should be given resisted movements of supination of the forearm, of extension of the hand and of each finger separately. Much tact, skill, and practice are required to adapt these resisted movements to the strength of the patient, and no novice had better undertake them. When done properly they are restful and invigorating in place of annoying and fatiguing.

The writer, in an article on "Writer's Cramp and Allied Affections" in the *New York Medical Record* of 28th April 1877, said of these movements that they tend to restore a harmonious distribution of will, nerve, and muscular effort by counteracting the motions that have produced the trouble. Dr. George W. Jacoby said of this suggestion that it was of more value than all that Julius Wolff, the so-called inventor of the cure of writer's cramp, had ever done. It was in 1882 that Mr. Wolff and the distinguished Drs. Schott of Nauheim got into an unseemly squabble as to priority of the use of massage and exercises in the cure of writer's cramp, five years after the publication of my article on the same subject. Wolff had the best of the argument.

The indications for the use of massage in these or any other cases could not have been better laid down than has been done in the following words:—"A really effective treatment of scrivener's palsy must be an agent which is at the same time both tonic and sedative in its neural effects, which must have the power of restoring the circulation of the blood in the suffering parts to its proper condition, which is capable of promoting the absorption of serous effusions, and will thus cause the nutrition of the maimed ganglia to be raised to a normal standard." "By stirring up the nerves and muscles of a limb you may," says Russell Reynolds, "to a certain extent act upon the other ends that are in the brain and spinal cord, and so improve the nutrition of the brain and spinal cord."

F. L. A., aged 24 years, weight 138 lbs., in good general health, and has excellent muscles, came to me on the 3rd of May 1915. For about five months he had suffered from almost total disability to write, which came suddenly after a hard day's work of eight or nine hours at his profession as assistant editor of one of our large monthly magazines. His usual day's work was four or five hours of writing, often stopping to think between times. After signing his name a few times he had pain in the interosseous spaces between the metacarpal bones. He had no cramp, no tremor. Tried writing with his left hand, which brought on pain in the region of the musculo-spiral nerve and insertion of the deltoid. Playing the piano or using the typewriter soon brought on the same disagreeable symptoms. Hands and arms were perfect for every other purpose. A few days of rest afforded him temporary relief. His physician had told him that he was suffering from neuritis, and that it would take him a year to get over it. Under the plan of treatment above outlined the patient made a good recovery, with variations. Sixteen days after he began treatment he wrote 300 words with ease, and two months after he started he could write

1000 words without any difficulty and no more fatigue than any one might feel.

19th May 1917.—This patient has returned to Boston from another city where he has been pursuing his profession for the past two years. He reports that he has continued well for writing, in spite of the fact that six weeks ago he had the grip, which was followed by hives, acute indigestion, and jaundice. He can still write all he wishes—1000 words at a time if necessary—even though his general strength is not yet up to *par*. He comes to me again for neuro-muscular pains in back and legs, which are so common after the grip.

H. W., aged 25, enjoyed good health and had strong muscles: by occupation a pianist and astronomer. For a year from 23rd June 1874 his wrists had been weak and lame, which he attributed in great part to the frequent and forced efforts required in elevating and changing the direction of his large telescope, which strained the extensors of his hands very much. He could play but fifteen or twenty minutes on his piano before his fingers and wrists gave out from fatigue and ache. No visible or tangible defect could be found save a somewhat constrained, stiff-bent position of the fingers, making voluntary extension difficult and disagreeable.

The treatment by his physician for several months had been half a dozen layers of bandage wound around each wrist and rubbing with liniments, without any improvement. These were left off when massage was begun, 23rd June 1874. The first four visits were devoted solely to manipulation of the fingers, hands, and arms. I find my notes quote Mr. W. as saying that his hands and arms felt stronger after the first handling. At the fifth and subsequent massages I added percussion and resisting motion to all the natural movements of the fingers, hands, and arms, but more particularly to *extension* of the fingers and of the hands on the forearms, and this was carefully kept within the limits of the patient's strength, so that at no time should he be made painfully conscious of his disability, as this would have frustrated the object of the treatment. In thirteen days from his first visit to me he had eight massages, at the end of which time I again find my notes quote him as saying that "if anyone had told him that his wrists and hands could have been made so much stronger as they now were in so short a time he would not have believed him." He could then elevate and move his telescope about with ease, and play on his piano for an hour at a time before fatigue came on. Massage was continued for a few weeks longer and the patient got quite well, so that he could use his upper extremities *ad libitum* for any length of time. He continued well, and for his scientific attainments was employed by the United States Government in a situation requiring a man physically perfect.

He had been suffering from muscular asthenopia—fatigue of vision



—for a long time, which is quite analogous to writer's cramp. Under massage of head, face, and eyelids he recovered so that he could read whole pages of the Beecher trial in the newspapers, and see stars in the daytime without falling on the sidewalk.

Mr. A. J., 31 years of age, was referred to me by Dr. George W. Gay. He was in good general health, and his muscles were well developed. It was two years before this that he first observed that he was not writing with his usual ease and accuracy—as if out of practice. He is a professor of writing in a commercial college. He gradually grew worse, so that he had to use a larger penholder and grip it harder and harder. Occasionally there were days when he could write well and easily. It was just after doing some very fine writing that had to be reproduced, and which he first outlined in pencil, that his difficulty began. When he first came to me he could write a few lines well and naturally, then the hand and arm became tired, the hand jumped and trembled; he grasped the pen more firmly, and as the fingers contracted he lost his grip altogether; so that he presented three phases of writer's cramp—tremulous, spastic, and paralytic—in one or more of which it usually occurs. When well he wrote with his hand in the so-called regulation position, resting on the tips of the little and ring fingers, but gradually he had to let his hand descend so as to write while resting it on the whole of the middle phalanx of the little finger, and using the muscles of the forearm rather than those of the hand and fingers. At times the forefinger alone would jump from the penholder, and then he would hold it down with the thumb and endeavour to continue writing.

Examination of the hand revealed almost nothing—apparently slight stiffness of motion in the interossei between the metacarpal bones of the index and middle finger, but not more than is often met with in those not troubled with writer's cramp. There was, however, not full strength in extending the fingers, which would point to over-use of the flexors and the need of invigorating the extensors to counteract this.

It was not till after I had seen this patient a few times that he told me that nine years before he had sprained his back by attempting to shut a heavy trap-door in a steamboat. He was beneath it, with his hands and arms extended over his head, when the boat gave a lurch and he was suddenly thrown backward. For this he had constantly worn a corset, which enveloped his whole trunk, in order to support his back. With this he was comfortable and did not require to lie down to rest during the day, but without it he drooped and sagged down, and soon a burning spot appeared about the middle of the dorsal region. Examination proved that there was nothing at all the matter with his back, unless it were muscular weakness, due to having worn the corset too long. After two massages the patient felt as if he had a new back, and could go for half a day without his support, and in



the course of two or three weeks it was laid aside entirely. If the condition of his back had anything to do with his trouble in writing, the latter ought to have appeared much sooner. Neither do I think that imagination had anything to do with his writing, for he did not know what was the matter with him until the day he was sent to me.

To keep the patient at his work, and at the same time attempt to get him well, was the problem to be solved. For home exercises I prescribed at first active extension and separation of the fingers, and later the same against resistance by means of rubber bands and tubes—so many movements at stated times—in order to bring into greater action the less-used extensors, and also to give a change of exercise to the interossei, and thus help to restore the lost equilibrium of will, nerve, and muscle. But to prescribe writing exercises for a patient whose chirography was like copper-plate did not seem so easy a matter. However, I had no difficulty, for it was evident that he was painfully slow and particular, and when fatigue came on after a few lines he had *hitches* in rounding the backs or left lower curves of his *l's* and *e's*, and in making the upward stroke of the leg of his *g's*. Therefore for home exercises in writing I directed large *l's* made quickly and continuously, followed by the reverse of these, making *m's*, so as to make him write from the upper arm and shoulder. As time went on we gradually reduced these in size, so as to bring more into play the muscles of the forearm and hand. When he had become proficient in these, the next exercise was a little more difficult, and consisted of *leblele*, large and rapid at first, then gradually diminishing, and later the exercise was *leleg*, practised in the same manner, many lines at a time, and in this way he soon got over his hitches and halts.

But calisthenics and elementary writing exercises, though helpful, have never been known to cure a case of writer's cramp, without other assistance. And for this purpose I gave the fingers, hand, and arm massage, deep manipulation, almost daily for four weeks. After the first two massages the patient wrote with unusual facility, but tired as soon as usual. After the third massage he was fatigued at the end of the first line, and it is a wonder he did not give up treatment then, as these cases are apt to do. After four massages he wrote with greater ease, and made delicate movements of fingers and thumb, which he had not been in the habit of doing, and he was but slightly fatigued with ten lines. After the third massage, which included the back, he was almost faint with hunger, though he had just had dinner before coming to me. I have observed the same effect in other cases—in one a physician, from percussion alone for a few minutes on the back. At the fifth visit there was some lameness of the muscles of hands and arms from the manipulation, which had not been rough, and this is generally a good omen. He thought the writing exercises which I prescribed for him were excellent practice to train his boys at the commercial college to

write a free, easy, and rapid hand, so he used them for that purpose. After the fifth and sixth massages he wrote still more easily and for an hour and a half each time, stopping occasionally to explain to his students. At the end of nineteen days he had no difficulty in grasping his penholder, and he could write with ease for three hours, and at the end of twenty-eight days he wrote with ease and fluency and animation. And thus he improved, with variations, but all the time making a better average.

At times we had to call a complete halt for a few days in his home exercises, when it was evident that he was overdoing and getting his nerves and muscles into an irritable condition, which was relieved by massage alone. But when this condition has arisen of its own accord or from writing, in other cases it might be an indication to urge them on with exercises in order to tire out the affected nerves and muscles and their central connections, and thus allay over-excitability. The same means incites nerves and muscles that are inactive, but here, in order to be of benefit, it was necessary to stop short of over-exciting them.

Our patient might have been discharged at the end of four weeks, but this was not in accordance with his wishes, for he did not then feel safe without the aid of massage, so he continued to visit me two or three times weekly for several weeks longer. At the end of six weeks, though he was generally fatigued from sickness and death in his family, he had not the slightest difficulty in giving his writing-classes full instruction from nine to twelve o'clock, and it was during the last ten days of this time that I thought it well for him to have a tonic consisting of 5 minims of tincture of *nux vomica*, 20 minims of *casarea cordial*, with 35 drops of elixir of *calisaya*, three times daily. He called upon me again ten weeks from the time I first saw him to report that he had attained perpetual motion, for the longer he wrote and the more he exercised the easier it became and the better he felt. I have heard from him recently, and he has continued well. Without this patient's hearty co-operation he would doubtless have sunk into the slough of despond.

From 1877 to 1882 Julius Wolff of Frankfort-on-the-Main had treated by massage and gymnastics in all two hundred and seventy-seven cases of writer's cramp and such troubles. Two hundred and forty-five were writer's cramp, and one hundred and thirty-two of these were said to be radically cured, twenty-two improved, and ninety-one without result. Thirty-two were pianist's, violinist's, telegrapher's, and painter's cramp; and of these twenty-five were said to be cured. In all one hundred and fifty-seven were cured, twenty-two improved, and ninety-eight not cured. Of the one hundred and thirty-two cases of writer's cramp cured, one hundred and eight were men, twenty-four women;

eighty-eight of the men were married and twenty single. Most of the women with writer's cramp were widows. Wolff usually gave his patients two *séances* a day for a month.

The advantages of massage and gymnastics in the majority of cases of writer's cramp and allied affections would seem to be removal of painful fatigue, spasm, tremor, weakness, inco-ordination of motion, feelings of constriction or tension, and disturbances of sensation. Hence, so far as we can judge, this method is capable, in many cases, of fulfilling therapeutic indications of the utmost importance, such as removal of increase and decrease of resistance in the paths of conduction, excitation, and motion; restoration of harmonious co-operation of individual movements, of natural conductivity and excitability, as well as of muscular sense and muscular effort; in a word, correction of underaction and overaction of muscles, nerves, and their central reflex apparatus. Impalpable trophic disturbances of the co-ordination machinery in the central nervous system are regarded as the origin and predisposing cause of writer's cramp and such maladies. If massage excels galvanism in correcting these disturbances, as would seem to be the case, it must indeed be a remedy of rare value and worthy of being used by the most skilful physicians.

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## THE PREPARATION OF DRY SPECIMENS FOR THE WAR OFFICE COLLECTION.

By G. RICHARDSON, Captain R.A.M.C.

THE following method of preparing dry specimens of bones illustrating injuries caused by various missiles has been gradually elaborated in the course of the past few months; until now the results obtained are very satisfactory.

*Preparation of the Specimen.*—Immediately after obtaining the specimen—operation or post-mortem—all muscle and connective tissue is removed as completely as possible, joints as a rule are disarticulated and the cartilage scraped off, and the bone is placed in a 4 per cent. solution of caustic soda, where it is allowed to simmer until the tissue remaining is gelatinised and the marrow melted out. The time taken for this to happen varies: the shafts of long bones are quickly cleaned, but the attachment of muscles, and more especially the attachment of the capsules of joints, are very stubborn, and the specimen requires to be taken out of the soda solution two or three times, scraped, and put back again; cartilage requires the same treatment.



When all tissue is gelatinised and removed by scraping with a knife, the soda solution is poured off, the bone washed in hot water, then put into a solution of chloride of lime, and boiled for about a quarter of an hour. After this the specimen is again washed in hot water and dried in the open air.

There are various precautions which must be observed in dealing with different specimens.

*Wounds about the Orbit.*—Owing to the great comminution of the delicate bones forming the walls of the orbit and nose, extreme care is necessary when cleaning the specimen, and especially when removing the lining membrane of the various cavities, which are already usually opened up, for it may easily happen that the whole fractured area is removed in the process.

*Cancellous Tissue.*—When cancellous tissue is exposed in the fracture, care must be exercised when the specimen is in the soda solution, for if boiled too long the tissue becomes extremely brittle and fragile. The same rule applies to joints and vertebrae, too prolonged boiling rendering the bones very brittle, and damage results when cleaning the specimen with a knife.

*Young Bone.*—This requires very careful handling, as the new bone is soft and friable and very easily detached from the old bone when cleaning.

*Mounting the Specimen.*—Two pots of glue are used for this, one is uncoloured, the other is coloured black by an admixture of ink powder. The ordinary glue is used for rearticulating bones, for fixing missiles *in situ*, and for any other purpose apart from the actual injury. The black glue is used solely for reconstructing the fracture, all fragments being glued in place, and after some hours the excess glue is scraped away, with the result that the lines of fracture are delineated in black. Fissures may be marked out in either red or black ink; personally I prefer the former, in order to distinguish a fissure from an actual fracture.

Specimens must be thoroughly dry and clean, and all fat, *i.e.* marrow, removed before assembling.

The specimen is finally varnished over, special attention being paid to cancellous tissue. The varnish used is composed of Canada balsam thinned with xylol and diluted with spirit.

I will conclude with one or two points which are of practical importance:—

1. If B. I. P. paste has been used in treatment, it must be removed before boiling, otherwise blackening of the specimen results.



2. Specimens must not be placed in formalin before boiling, as it becomes practically impossible to clean them owing to the hardening of the tissues.

3. It is not always necessary to disarticulate vertebrae, for the cord can be removed by first freeing with a long probe-pointed bistoury and extracting by gentle traction on the dura, and then the specimen is carefully boiled as above, the intervertebral discs remaining practically intact.

The advantages of this method are, first, rapidity of preparation—a specimen can easily be finished in two days; and, second, the whiteness of the specimens and their freedom from grease or smell.

I have to express my thanks to Colonel F. M. Caird, A.M.S., for the interest he has taken in this work and for the useful advice which he has frequently given me, and I also wish to acknowledge the intelligent co-operation of my laboratory assistant, Sergeant A. Cook, R.A.M.C.

## RECENT ADVANCES IN MEDICAL SCIENCE.

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### SURGERY.

UNDER THE CHARGE OF

J. W. STRUTHERS, F.R.C.S., D. P. D. WILKIE, F.R.C.S.,  
AND JAMES M. GRAHAM, F.R.C.S.

#### THE USE OF FREE GRAFTS OF SKIN FOR THE RELIEF OF CONTRACTURES.

DAVIS (*Surg., Gynec., and Obstet.*, July 1917) discusses the treatment of contractures by grafts of the whole thickness of the skin. The contractures considered in this paper are those following burns, injuries, and infections in which the skin and often the subcutaneous tissues have been completely destroyed. The results of treatment in such cases by fibrinolysin are disappointing. The use of pedunculated flaps is especially valuable when a pad of fat is required in addition to the whole thickness of the skin, but this method has its limitations, and the constrained position which may be necessary to maintain the flap in place often entails great discomfort.

The area which is to receive the free graft should be massaged for some time before operation in order to improve the blood-supply. All of the scar tissue should be excised, if possible, but in many cases the entire part is covered with scar, and in these only the contracture

should be entirely excised, while the movable scar tissue beyond should be utilised. In contractures of the hand it is best at this stage to apply a suitable sterilised splint padded with thick felt, and so arranged that the fingers can be held extended either by loops of tape or by cotton clove fingers.

The raw surface which is to receive the graft must be thoroughly dry. If it is difficult to check the oozing, the application of the grafts should be postponed for a day or two. The presence of blood-clot seriously interferes with the formation of an adequate blood-supply for the graft. If the graft is placed on a dry surface it has the tendency to prevent further oozing. Whole-thickness grafts may also be placed successfully on healthy granulations which are level with the skin edge. The grafts should be placed close to the growing edge and to each other.

Careful preparation of the surface from which the graft is to be taken is also necessary. The skin is shaved, and washed with green soap and water, then rinsed with sterile water, and sponged with ether followed by alcohol. Finally, it is washed with normal salt solution and dried with a towel.

After removal the graft shrinks to about two-thirds of its original size, and this must be allowed for. The graft should be cut in the shape of an elongated ellipse to facilitate suture of the resultant wound without tension, and should include the whole thickness of the skin and the underlying fat. The graft should be wrapped in dry gauze while the wound is being stitched. All the fat on the deep surface should be removed with scissors curved on the flat, and finally the graft should be perforated in several places to permit the escape of blood or secretions. The graft may fit the defect or require to be divided into several pieces, depending on the shape of the wound. If one piece can be used, four horse-hair sutures should be inserted to secure it without tension. It is sometimes advisable to introduce a continuous suture or interrupted stitches between the fixation sutures, the latter being inserted through the whole thickness of the graft, while intermediate sutures should be superficially placed, and as close to the skin edges as possible. Occasionally no sutures are required. A slight even pressure should be applied to maintain apposition between the graft and the raw surface, but excessive pressure is to be avoided. It is important that in performing the operation the handling of the graft should be reduced to a minimum.

Silver foil, dry gauze, and moist gauze, which is kept wet or allowed to dry, are all excellent dressings. The author has found useful a flexible paraffin mixture used by Carrel for another purpose; this is composed of paraffin, 52°, 18 grms.; paraffin, 40°, 6 grms.; beeswax, 2 grms.; castor oil, 1 c.c.; the mixture is applied at body heat after sterilising in the autoclave. None of the above-mentioned dressings

should be used exclusively, as the dressing should be chosen with regard to the conditions. Gauze kept moist with saline is the most suitable dressing for a graft used near the eye. In children under ten years of age a plaster case should be applied, in addition to the splint, in cases of contracture of the hand or arm; if there are no contraindications the plaster should not be removed for three weeks.

In whole-thickness grafts there may be practically no maceration of the superficial layers, but in other cases only the corium may remain intact. Occasionally an isolated section of a graft will lose its vitality and a patch of granulation tissue will appear. When the superficial layers are macerated and come away, either as a whole or in part, and the epithelial growth of the remaining corium is sluggish, it is desirable to scatter over these areas either epithelial scrapings or small superficial grafts of epithelium alone. The final results in such cases is usually good. A successful case of whole skin grafting is characterised by elasticity, softness, movability, and normal colour of the skin. According to Krause, all of these desirable features are obtained in a third of full takes. In some cases a brown pigmentation may appear, but not more often than in areas covered with thin grafts. The graft may be cyanotic for some time, due to enlarged blood-vessels; later the surface may become irregularly shrivelled. In cases of contractures, of course, these changes do not affect the improvement of function and are only important from the cosmetic point of view.

The skin for grafting may be taken from almost any part where there is sufficient laxity to permit of suturing the wound. Grafts may be cut from the whole length of the thigh if necessary. A long and wide area of skin may also be cut from the abdominal or chest wall by using a boomerang incision.

Carefully shaped hair-bearing portions of skin may be cut from the pubis in cases of contracture involving the eyebrow, but in doing so it is necessary to study the direction of the hair growth. Hair also grows on grafts taken from the thigh and other hair-bearing parts, and this fact must be borne in mind.

The processes of repair which follow are similar to those which occur in normal healing. New vessels in the grafts have been demonstrated by injection methods on the third day. As early as the sixth day a whole-thickness graft implanted on a fresh wound will bleed when cut. The author has obtained bleeding from a graft implanted on healthy granulations in eighty-four hours.

After three or four days the graft itself begins to take an active part in the healing process. The epithelial cells at the edges proliferate and growth occurs also from the cells of the sweat ducts and hair follicles. The elastic tissue degenerates and is then replaced. A thin layer of adipose tissue develops under whole-thickness grafts in two or three weeks, thus ensuring mobility and limiting future contraction.



Sensation begins to be restored within four or five weeks. While the author prefers always to use autografts, he has obtained success also with isografts and with grafts of skin from various animals. In the latter case, however, the grafts ultimately tend to disappear, sometimes after the wound is entirely healed.

#### PULMONARY FAT EMBOLISM AS A CAUSE OF POST-OPERATIVE DEATH.

Bissell (*Surg., Gynec., and Obstet.*, July 1917) believes that deaths clinically supposed to be due to surgical shock, are in many cases to be attributed to pulmonary fat embolism with its attendant blood-pressure phenomena. Fischer has shown that 60 per cent. of oil injected intravenously in the rabbit soon lodges in the lung. Warthin has found that repeated injections of oil into the circulation are followed by a steady fall of arterial pressure and by a gradual rise of pressure in the jugular vein and right auricle. The effects of oil are very similar, therefore, to the phenomena of surgical shock.

During a period of eight months the author examined post-mortem six cases of post-operative death, in which, clinically, the symptoms were apparently those of shock, and in all of which the only pathological condition found was fat embolism. In a typical case fully described the conditions found were as follows:—The patient was extremely fat, and had been operated on forty-eight hours before death for an umbilical hernia. In the depths of the wound there was a great deal of fluid fat, mixed with blood-stained serum. Many oil droplets were present in the blood obtained from the lungs, in the inferior vena cava, right side of the heart and dural sinuses; disseminated petechial hæmorrhages were present in the pleura, peritoneum and skin, from fat embolism. There was marked engorgement of the right side of the heart and of all the large venous sinuses. In the microscopic preparations fat emboli were found in the lungs, brain, kidneys, liver, heart-muscle, spleen, adrenals, and skin.

In two other cases mentioned the patient had been operated on for breast tumour. Unless the examination is carefully made the existence of a widespread fat embolism may easily be overlooked by the pathologist. The exact mechanism of the death and the mode of entrance of fat into the blood-stream have not yet been clearly demonstrated. It seems definitely established, however, both clinically and by experimental evidence, that pulmonary fat embolism causes a lowering of arterial pressure and an elevation of venous blood-pressure, which may be sufficient to cause death. The frequency of post-operative shock in obese subjects as compared to its occurrence in the emaciated, or only moderately well nourished, suggests a connection between these factors. Probably an increase of the viscosity of the blood in lipæmia favours the lodgment of fat droplets in the pulmonary capillaries. A



practical point which is emphasised is the importance of complete hæmostasis, and particularly of the central ends of veins in areas rich in fat; in such wounds a pool of blood-serum and oil globules tends to collect, and it is suggested that the gaping ends of unligatured veins may absorb even large quantities of oil material which is conveyed to the lungs.

#### REPAIR OF INJURIES TO THE SKULL BY PERFORATED PLATES.

Mitchell (*Brit. Journ. Surg.*, July 1917) has operated on six cases of gap in the skull, resulting from war injury, with satisfactory results, employing thin perforated silver plates. The silver is rolled out a little thinner than an ordinary visiting card, and is then punched with holes one-eighth of an inch in diameter, as close together as possible. The plate can be readily adapted to the convexity of the skull. The perforations have the advantages that they lighten the plate, they admit of the escape of blood, and they provide a simple means of fixing the plate in position.

After reflecting a large flap of scalp the opening in the skull is explored, any foreign body removed, adhesions freed, and bleeding arrested. The periosteum should be carefully raised for half an inch all round the gap. The plate is next inserted, after being cut to size and suitably shaped, the edges being slipped beneath the periosteum and fixed by catgut sutures. A drainage tube should be left *in situ* to prevent a hæmatoma.

The largest plate employed by the author measured  $4\frac{1}{2}$  ins. by  $2\frac{1}{2}$  ins. In every instance primary union was obtained, and marked relief followed the operation. None of the plates caused any trouble.

J. M. G.

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### OBSTETRICS AND GYNECOLOGY.

UNDER THE CHARGE OF

A. H. F. BARBOUR, M.D., AND J. W. BALLANTYNE, M.D.

#### BILATERAL OOPHORECTOMY IN PREGNANCY.

DR. LUIGI STROPENI (*Ann. di ostet. e ginec.*, 31st December 1916, ann. xxxviii. pp. 493-504) records a case of double oophorectomy in pregnancy, which throws some light on the vexed question of the effect of removal of both ovaries upon gestation. The woman was 22 years of age, and had been married when  $15\frac{1}{2}$  to a healthy man. Up to the time of her marriage she had not menstruated; but four months after that event she had a red discharge, followed by a pregnancy. A second pregnancy soon occurred, and both the first and second ended in normal labours, puerperia, and lactations. The second child was large, and its

size was the cause of some delay in the labour. Both children were healthy, and survived. When the woman came under Dr. Stropeni's care she was pregnant (about the fourth month) for the third time. The abdomen was larger than the date of pregnancy suggested, and an examination revealed the presence of a hard, smooth, movable, and painful mass in the neighbourhood of the left ovary and about the size of a mandarin orange. Abdominal pain became aggravated, and there was an alarming enlargement, along with increasing weakness. In a few weeks the mass in the ovarian region was as large as a foetal head and the uterus was pressed to the right side. The tumour was regarded as a dermoid cyst, and in view of possible complications at the time of delivery it was decided to open the abdomen. At the operation the left ovary was removed, and as the right one was also affected and situated in the pouch of Douglas it, too, was taken away. The growths were found on microscopic examination to be of the nature of luteinic sarcomata. The woman made a good recovery from the oophorectomy and the pregnancy continued. Soon, however, there were various nervous phenomena, pointing to ovarian inadequacy, and ovarian extract was given to make up this defect. Thereafter the gestation went on uneventfully, and a large well-developed infant was quickly and easily born. The mammary secretion was defective at first, but soon became sufficient for the child's needs. This case furnishes additional evidence that it is possible to remove both ovaries in a pregnant woman (at any rate after the fourth month) without necessarily interrupting the pregnancy. No support is found in the observation for Fränkel's view of the importance of the corpus luteum. What makes the case all the more striking is the fact that symptoms of ovarian insufficiency occurred, proving that Fränkel's suggestion of a third ovary could hardly be entertained. It is also an interesting fact that after a short preliminary failure the mammary function was performed normally, notwithstanding the absence of the internal secretion of the ovaries.

#### SECONDARY ABDOMINAL PREGNANCY.

Dr. Bruno Quarella (*Ann. di obstet. e ginec.*, 30th November 1916, ann. xxxviii. pp. 481-491) has reported an extraordinary instance of secondary abdominal gestation following upon a perforation of the uterus. The patient, a multipara of 45 years, had suffered some time previously from parametritis. She confessed that after a period of two months' amenorrhoea an attempt had been made to procure abortion, and that this attempt had been followed by uterine hæmorrhage, violent abdominal pain, and vomiting. Gradually these phenomena passed off, but menstruation did not return. About the fifth month of amenorrhoea she had a severe abdominal crisis, lasting for a week, and two or three other similar attacks had occurred at decreasing intervals of time. The breasts and abdomen showed the ordinary signs of

pregnancy, and palpation revealed a rounded, ill-defined swelling of irregular consistence in the lower part of the abdomen. The bimanual examination discovered the uterus pressed forwards against the pubic arch and difficult of delimitation; there was a projecting mass in the posterior fornix. No foetal heart or uterine souffle could be heard. The diagnosis of extra-uterine pregnancy was made provisionally, and the abdomen was opened by Professor Bobbio. The uterus, as large as the adult fist, was found lying to the front and slightly to the left side; the pouch of Douglas and the right half of the true pelvis were occupied by a fleshy mass, which turned out to be the placenta; an umbilical cord was next detected, and followed to a foetus, which was discovered lying free (without a bag of membranes) among the intestinal coils; and the cord was cut and the foetus, which lived for three hours and had a uterine age of about six and a half months, was quickly extracted. The operator then proceeded to extract the placenta. It was easily separated from the rectum, the pouch of Douglas, and the pelvic cavity; but it was so firmly fixed to the posterior surface of the uterus that attempts at removal were followed by hæmorrhage and the discovery of a perforation of the uterus. Subtotal hysterectomy was consequently decided upon and quickly performed; but at this point the patient, who had been taking the anæsthetic badly, fainted, and although all efforts were made to restore the heart's action, she died in about half an hour. The examination of the uterus revealed a perforation in the posterior wall about 3 cms. in length and occupied in part by placental tissue. Obviously the attempt at abortion, carried out with a rigid instrument and with force, had perforated the organ and allowed the foetus to escape; the placenta had passed through the aperture also, with the exception of a small portion which maintained a vascular connection between the foetus and the interior of the uterus.

Dr. Quarella draws certain interesting conclusions from this rare case. The first is, that traumatism must now be regarded as one of the etiological factors in ectopic pregnancy; the perforation of the uterus may lead to the escape of the foetus and of part of the foetal membranes and placenta into the peritoneal cavity with the establishment of secondary abdominal gestation. The second is, that the foetus may develop whilst lying free in the peritoneal sac, and may actually reach full term alive, normal, and capable of postnatal existence. In the third place, the case exhibits the greater difficulty which exists in the diagnosis of a late than of an early extra-uterine pregnancy. In the fourth place, additional evidence is afforded of the extraordinary difficulty which exists in deciding upon the best form of operative interference in such ectopic pregnancies as go to the full time. The great danger arises from the hæmorrhage following upon the separation of the foetal annexa, and especially of the placenta, from the tissues to



which they have become adherent. If the foetus has died it is generally thought to be well to allow a week to elapse so as to lessen the bleeding from the placental site during the operation. If the foetus is still alive some operators would open the abdomen at the thirty-fourth or thirty-sixth week, others at the thirty-eighth, and yet others during the first two weeks of the ninth month. As a general rule, the abdominal is to be preferred to the vaginal route for the removal of the parts; and sometimes it is wiser to leave part of the foetal annexa *in situ*, closing the abdomen partly and draining. Of course the ideal plan is total removal of all the foetal annexa, with complete closure of the abdomen, but it is not always practicable or safe.

#### SALPINGO-OOPHORITIS IN PREGNANCY.

Dr. A. Brindeau (*Arch. mens. d'obstét. et de gynec.*, 1917, ann. vi. pp. 1-33) has gathered together forty-four cases in which salpingo-oophoritis existed as a complication of pregnancy leading to surgical interference. Twelve observations from his own practice are included. He arrives at the following conclusions:—Annexial infections of old standing do not always prevent impregnation. When the lesions have ceased to be active for a considerable time they do not usually set up complications, either in pregnancy or in the puerperium; indeed these lesions may improve under the influence of gestation. In certain cases, however, old salpingo-oophoritic lesions may be the cause of more or less serious occurrences during pregnancy; and of course acute or subacute lesions will be very likely to do so. Some of the complications are purely mechanical in their nature; such are pain, adhesions, uterine displacement, twisting of the Fallopian tubes, and ectopic gestation. More important ones are of a septic kind. These are most commonly met with either at the beginning of the pregnancy (in 31 per cent. of the collected cases), or at the end of it, or in the puerperium. It appears that the process of delivery, whether it be an abortion or a labour, often sets up an acute complication, and this may take the form of inflammatory attacks of the uterine annexa or of the peri-uterine cellular tissue, or (most often) of general peritonitis, which runs a quick and usually a fatal course. Dr. Brindeau is of opinion that the treatment of these various complications must be surgical, and that it must be employed all the more quickly because the patient is pregnant. It is the best means of saving the woman and of allowing the pregnancy to continue to term. If the patient has expelled the product of conception she ought to be treated as if suffering from a complication arising during the puerperium. If the infection appears to be localised or tending to localise itself it is permissible to wait, but always in a prepared attitude; interference may then occur later. If, however, there are signs of general peritonitis, one must act quickly.



Laparotomy alone gives a chance of life to these women condemned otherwise to a certain death. In the forty-four cases in which operation was performed there were thirty-eight recoveries, or 86 per cent. The following were the details:—There were five colpotomies, with three cures; one case of incision of abscess, with cure; one craniotomy (cure); ten salpingectomies, with nine cures; three laparotomies, with two recoveries; four hysterectomies, with two cures; eleven double salpingo-oophorectomies, all successful; one operation for ileus, with cure; five appendicectomies and salpingectomies, all successful; and three salpingotomies for tubal torsion, with success in all. On the other hand, there were forty-nine cases which were not operated on, and of these only nineteen (38 per cent.) recovered. The conclusion would appear to be that operation is the most hopeful method of treatment; but, adds Dr. Brindeau, one must draw this deduction with caution, as one must all statistical inferences.

#### THREE THOUSAND CONFINEMENTS IN PRIVATE PRACTICE.

Dr. S. P. Ford (*Canadian Med. Assoc. Journ.*, 1917, vii. 412-419) contributes an interesting series of facts from his obstetric experience, extending over fifty years. He attended three thousand cases, and 1574 of the infants were males, 1424 were females, and 2 were of doubtful sex; yet a little further on in his article he speaks of thirty-six cases of twins, so one must conclude that he counted each separate birth as a "case." His first midwifery ended in the birth of an anencephalic monster; his second was twins, both presenting by the breech; his third was a shoulder presentation, requiring version; his fourth was one of cervical rigidity; and his fifth was post-partum hemorrhage. After this inauspicious quintuple commencement normal cases came to him, and practice was unexciting till a placenta prævia experience happened to him some years later. He had twenty cases of eclampsia and lost five of the mothers; in all the fatal cases the fits came on before delivery. He met with four instances of hydatidiform mole, two of which were twin cases. He had one inversion of the uterus, due to traction upon the cord carried out by the midwife before his arrival. In nearly two hundred labours Dr. Ford had recourse to the forceps, but of late years he has relied more upon the use of pituitary extract. More than half his confinements were in primiparas, and he had one patient who was giving birth to her sixteenth child. His youngest patient was 13½ when she gave birth to her first child, and his oldest lacked only two months of her fiftieth year when she had a baby; in both cases the labour was comparatively easy. There were three cases in which fourteen, sixteen, and seventeen years respectively intervened between the first and second pregnancies.

J. W. B.

## DISEASES OF CHILDREN.

UNDER THE CHARGE OF

W. B. DRUMMOND, F.R.C.P., AND A. DINGWALL FORDYCE, M.D.

## RATIONS FOR BOYS' MILITARY TRAINING CAMPS.

It has been estimated that a healthy baby nursed at the breast drinks in twenty-four hours an amount of milk roughly corresponding to one seventh of his body weight, or, in other words, daily food of the value of 100 calories per kilogram of body weight. Of these 100 calories, protein supplies 12, carbohydrate 41, and fat 47.

During the second week of life, then, a breast-fed baby, who weighs 8 lbs., requires rather more than 350 calories food value—protein 42, carbohydrate 143, fat 165 daily (*i.e.* 17 ozs. of milk).

In the case of adults, while formerly 3000 to 3500 calories daily was a widely accepted estimate of the requirements for an average active man, the work of Chittenden went to show that this allowance was excessive, and particularly so with regard to the protein elements.

War experience forcibly brings home the importance of scientifically feeding hard worked soldiers under varying conditions and in a variety of climes.

It also has stimulated investigations into the needs of adolescents. Fitch ("Rations for Boys' Military Training Camps," *Pediatrics*, April 1917) quotes Du Bois, who has shown by calorimetric experiment at the Russell Sage Institute of Pathology that the actual food requirements of young boys is 25 per cent. above that of the adult.

Gephart, as the result of an investigation into the actual amounts of nourishment taken by more than 300 boys in one of the largest private boarding schools in the United States, found that the individual daily consumption of food was, on an average, of the value of 5000 calories.

Lusk also has shown that 5000 calories is the amount of energy in food a healthy American boy needs.

Each individual needs a different amount of food, which will vary according to his structure and surroundings; he will need protein, carbohydrates, fats, water, and, in addition to mineral salts, it is absolutely essential that certain types of proteins, certain types of fats, and certain salts be included in the dietary, and, besides, he must have other "accessory substances," generically called vitamins, if he is to show physical growth.

Unless food contains sufficient vitamine principles, no matter how well balanced the ration may be in the ternary food elements, nor how large quantities are consumed, nor how high the caloric value may be, there will be malnutrition.

Canned vegetables, fruits, and meats are devoid of vitamine because of the excessive degree of heat necessary to sterilise the food sufficiently for preservation, and the following foods are relatively poor in vitamins:—Sterilised (canned) milk, sterilised (canned) meat, cabbage, turnips, carrots, and like vegetables, all dried vegetables, dried fruits, highly milled cereals (white patent roller process flour, corn meal, and polished rice), pork, molasses, and corn syrup.

As examples taken from a suggested daily menu for one week of a well-balanced ration for a growing boy the following are interesting:—

PROPERLY BALANCED DIETARIES FOR BOYS' MILITARY  
TRAINING CAMPS.

MONDAY.

*Breakfast—*

Orange . . . . .	1 medium.
Oatmeal, milk, sugar . . . . .	3 tablespoonfuls.
Eggs . . . . .	2 boiled.
Fried bacon . . . . .	2 slices.
Bread . . . . .	2 slices.
Butter . . . . .	1 square.
Coffee, milk, sugar . . . . .	1 cup.
Salt, pepper.	

Total calories, 1033.

*Dinner—*

Creamed pea soup . . . . .	6 ounces.
Roast beef . . . . .	1 slice.
Brown gravy.	
Lima beans . . . . .	2 heaping table-spoonfuls.
Mashed potatoes . . . . .	2 " " "
Lettuce . . . . .	One half head.
American cheese . . . . .	1 ounce.
Bread . . . . .	2 slices.
Butter . . . . .	1 square.
Bread pudding . . . . .	3 heaping table-spoons.
Cocoa . . . . .	1 cup.
Salt, pepper, pickles, catsup.	

Total calories, 1863.

*Supper—*

Lamb or pork chop . . . . .	One.
Macaroni and cheese . . . . .	2 heaping table-spoons.
Sliced tomatoes . . . . .	1 medium size.
Bread . . . . .	2 slices.
Butter . . . . .	1 square.
Peach pie . . . . .	One-sixth.
Iced tea . . . . .	1 glass.
Salt, pepper, pickles, catsup.	

Total calories, 1425.

Total calories for day, 4321.

## THURSDAY.

*Breakfast—*

Stewed prunes . . . . .	6 medium.
Force . . . . .	5 heaping tablespoons.
Eggs . . . . .	2 soft boiled.
Fried bacon . . . . .	2 slices.
Bread . . . . .	2 slices.
Butter . . . . .	1 square.
Orange marmalade . . . . .	1 heaping tablespoon.
Coffee . . . . .	1 cup.
Salt, pepper.	

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 Total calories, 1219.
*Dinner—*

Potato and meat soup . . . . .	6 ounces.
Roast beef . . . . .	1 slice.
String beans . . . . .	4 heaping tablespoons
Baked potatoes . . . . .	1 medium size.
Sliced tomatoes . . . . .	1 „
American cheese . . . . .	1 ounce.
Bread . . . . .	2 slices.
Butter . . . . .	1 square.
Ice cream . . . . .	2 heaping tablespoons.
Chocolate cakes . . . . .	1 medium slice.
Cocoa . . . . .	1 cup.
Salt, pepper, pickles, catsup.	

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 Total calories, 1929.
*Supper—*

Pork chop . . . . .	1 chop.
Macaroni and cheese . . . . .	2 heaping tablespoons.
Sliced beets . . . . .	2 „ „
Green corn . . . . .	1 ear.
Sliced cucumbers . . . . .	8 thin slices.
Bread . . . . .	2 slices.
Butter . . . . .	1 square.
Peach pie . . . . .	One-sixth.
Salt, pepper, pickles, catsup.	

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 Total calories, 1361.

Total calories for day, 4509.

### MENINGOCOCCI IN THE PURPURIC ELEMENTS OF MENINGOCOCCAL INFECTION.

Netter and Salanier (*Brit. Journ. of Children's Diseases*, April-June 1917) show that the cutaneous hemorrhages which sometimes accompany cerebro-spinal meningitis are due to the deposit of meningococci around the vessels.

Specimens were shown from two cases (*Société de Biologie*, Paris). The first case was one of meningococcal infection without meningitis. Diffuse purpura and high fever were the striking symptoms. Micro-



scopical examination of the serum from a vesicle which covered a part of the purpuric lesion showed the presence of meningococci. Intrathecal and subcutaneous injections of anti-meningococcal serum were given with good effect, but later erysipelas supervened.

The second case was that of meningitis preceded by purpura. A child, aged  $5\frac{1}{2}$  years, was suddenly seized with vomiting and general pains. The temperature was  $104^{\circ}$  F. There were no signs of meningitis. There was a purpuric eruption, which rapidly spread, and two days later there were distinct symptoms of meningitis. On this day meningococci were recovered from the spinal fluid, and on the following day from a small purpuric vesicle. The child died on the fourth day of the illness, although he had had 120 c.c. of anti-meningococcal serum intrathecally on three successive days. In this case, as in the first, a blood-culture was made, but did not show meningococci.

In a third case of acute meningitis with purpuric onset the meningococcus was not discoverable.

The authors say: "These observations of ours have not only a theoretical interest. Purpura in meningococcal infection may occur some days before the meningeal involvement. The latter may remain latent indefinitely, or even be absent altogether. The demonstration of the meningococcus in the skin lesions will confirm the diagnosis. It will give us information more quickly than blood-culture, which alone has been in use hitherto, and of which the results are far from constant. And in cases of this kind, which are always grave, an early diagnosis is of the utmost importance, because such a diagnosis alone will enable us to undertake a rapid and intensive serotherapy, which is all the more necessary owing to the special gravity of these cases."

The same authors, along with Mme. Wolfrom, report the following case:—

A male infant, aged 10 months, was born at term and breast-fed. The parents were in good health, and lived in a large, well-ventilated court. The father was a horse dealer, and attended fairs; neither the mother nor the child had had anything to do with strangers lately. The infant had never had any serious disease. A fortnight ago the infant presented all over its body little red spots, in the middle of which a little pimple appeared, but rapidly dried up and formed a crust. The doctor who was consulted thought it was an eruption due to digestive disturbances caused by Nestlé's food, and, as a matter of fact, after this had been stopped the pimples disappeared. The infant, therefore, was in excellent health when, in the afternoon of the 3rd November 1916, it was seized with shivering and fever. In the evening its head and arms showed some convulsive movements. It was feverish throughout the night, and in the morning the mother found it had large violet spots all over its body. On admission to hospital on 4th November at 10 A.M. the child was extremely weak,

dyspnoic, and cyanosed, and presented slight suprasternal recession. Temperature, 104° F. All the body was covered with more or less extensive violet patches. Some which were rounded, and of the size of a lentil, with the centre a little paler, were situated on the abdomen and anterior aspect of the limbs. On the contrary, the posterior surface of the limbs, the back, and buttocks, *i.e.* the situations exposed to rubbing, were covered with large wine-coloured patches resembling post-mortem staining. The mucous membranes were cyanosed also, but did not show ecchymoses. On auscultation we found loud râles in both lungs, especially the right.

In spite of the absence of signs of a meningeal reaction we did a lumbar puncture, which gave issue to a clear fluid (found normal on subsequent examination).

Nevertheless, warned by our experience of previous cases, we injected 20 c.c. of anti-meningococcal serum. About the same time we made several small scarifications with a vaccinostyle in the darkest purpuric patches, and we made smears of the sanguinolent serum obtained. The infant's condition rapidly became worse, and, in spite of injections of camphorated oil and mustard baths, it died early in the afternoon.

We have already said that the cerebro-spinal fluid withdrawn was practically normal, *i.e.* contained no excess of albumin; six leucocytes per cubic millimetre; and no micro-organisms. The cultures also proved to be sterile. But in the smears of the serum from the purpura we found definite and characteristic meningococci, though they were isolated and scanty. This purpura of fulminating course was therefore, as we presumed, a purpuric form of meningococcus infection without meningitis.

The interest of these findings, both from a diagnostic and therapeutical point of view, is obvious. In our first two cases the purpuric spots had definite vesicles, and the examination was thereby facilitated. In our last case, in spite of the absence of vesicles, and by mere scarification of the purpuric spots, we could just as readily detect the existence of meningococci in this situation, and thus attribute the existence of purpura to its true cause, and thereby justify the treatment adopted. In the present case the serum did not have the time required to destroy the pathogenic agent, but it is to be hoped that, thanks to these findings, other cases may benefit from an accurate and appropriate treatment.

#### THE IMMEDIATE AND REMOTE PROGNOSIS OF INFANTILE CONVULSIONS.

Collin and Revon (*Arch. de mèd. des enfants*, June 1917), as a result of prolonged study of infantile convulsions, come to the following conclusions :—

The immediate and remote prognosis of convulsions should be based upon the nature of the convulsive seizures, which permits of them being divided into two groups—I. Those which are clonic or benign; II. Those which are tonic or grave.

I. Clonic convulsions are (*a*) of the infantile spinal type while this age type persists; (*b*) they only occur with certain constitutions, viz. where there is a neuropathic or alcoholic heredity; they are episodes in life, and not the commencement of a disease; (*c*) they may be produced by any cause—mechanical, toxic, or physical; (*d*) they are evidence of bulbo-medullary irritation and not cortical, as clinically they are always bilateral, and experimentally by cortical irritation they are always unilateral. They are accompanied by very few symptoms relating to other organs.

II. Tonic convulsions are (*a*) not at all related to any particular period of life, but are evidence of a cellular lesion; (*b*) they may occur in any person who suffers from an affection of the central nervous centres; (*c*) they may be produced by any cause—physical, toxic, mechanical, or infectious—which can alter the histology of the cell; (*d*) they demonstrate a nervous lesion, and may be accompanied by serious respiratory and cardiac symptoms. The after-history of children is quite different according as they have suffered from convulsions of type I. or those of type II.

The first are neuropaths, who will suffer from occasional morbid symptoms according to no definite pathological anatomy.

The second, in the great majority of cases, suffer from demonstrable nervous lesions, and become paralysed or epileptic, or die from meningitis or encephalitis.

Whenever a tonic phase is noted in the course of a convulsive seizure, the prognosis, both immediate and remote, should be very guarded.

A. D. F.

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## THERAPEUTICS.

UNDER THE CHARGE OF

JOHN EASON, M.D.

### SERUM TREATMENT OF WEIL'S DISEASE.

IT is interesting to find that the causal organism appears to have been discovered in Weil's disease, and that a serum has been obtained which has already, in the hands of some Japanese observers, proved satisfactory—at least in their opinion. A conjoint article on the "Serum Treatment of Weil's Disease," by Professors Inada and Ido, with Drs. Hoki, Ito, and Wani of Kyushu University, Japan, appears in the January number of the *Korrespondenzblatt für Schweizer Aerzte*. The serum was obtained from convalescent patients and from actively immunised



horses, and it was found not to matter, so far as results went, what was the source of the serum. Inada and Ido claim to have demonstrated that Weil's disease is due to infection by a spirochæte, and that the serum of patients convalescent from the disease, and the serum of animals rendered immune, exerts a spirochætocidal and spirochætolytic action. As yet they are uncertain as to whether the serum is antitoxic in addition. They regard it as essential that the treatment by serum injections should be begun as early as possible. Their clinical experience leads them to advise intravenous injections of three doses of 20 c.c. each, at intervals of five or six hours, and they note in a series of thirty-five cases (1) a mortality of 11·4 per cent. as contrasted with a usual mortality of 30 to 40 per cent.; (2) a rapid decrease to vanishing point of the number of spirochætes in the blood; (3) that fewer spirochætes are found in the viscera of those patients who have succumbed in spite of serum treatment; (4) no disadvantageous side-effects. The authors are, on these grounds, satisfied with the results hitherto obtained.

#### COLLOIDAL IODINE.

Laumonier publishes, in the *Revue de Chimiothérapie* for February 1917, an original article on "Colloidal Iodine." The contribution is very opportune at the present moment when so much attention is being directed to the colloidal metals, both as regards their preparation, chemical and physical properties, and therapeutic effects. The present article may be summarised as follows:—Colloidal iodine possesses the pharmacodynamic properties of iodine, more especially in relation to glandular structures, on which it acts powerfully, but this action is less harsh and less toxic than the usual iodine preparations, even when administered intramuscularly in large doses. It is strongly germicidal and antitoxic, particularly against tubercle bacilli and pneumococci. Its action in reducing high blood-pressures is very striking, and its effect in causing diuresis in these cases pronounced. The author considers that the concurrence of iodism after the administration of colloidal iodine is very much less frequent than when ordinary iodides are employed.

#### TREATMENT OF PERNICIOUS ANÆMIA.

Larrabee, in the *Boston Medical and Surgical Journal*, 19th April, writes on the treatment of pernicious anæmia. He points out the difficulty in appraising exactly or correctly the effect of a given remedy owing to the admitted difficulty in diagnosis (so many diseases, such as helminthiasis, giving a similar blood-picture), and also on account of the well-known tendency to spontaneous, though temporary, cure, more particularly in early cases of the disease. There is not much specially



new in the article, but the author alludes with approval to the operation of splenectomy. This operation he regards with favour in cases which have failed to respond to medicinal treatment, and where transfusion, performed once or oftener, has not been attended with benefit. It is admitted that the theory underlying the practice of splenectomy in pernicious anaemia is not convincing. It is assumed that the spleen in this disease is exercising its hæmolytic function too vigorously, and that after its removal other blood glands carry out such hæmolytic action as is needful for the body, and that they do this in no excessive manner.

#### CONDENSED MILK.

Condensed milk in the diet of soldiers in the field is the subject of a short brochure by Dr. Lassablière, who strongly advocates its use in the ordinary ration of the soldier on account of its portability, purity, high caloric value, and pleasant taste. The presence of sugar in it renders it particularly useful as a food-stuff which is readily absorbed and heat producing. Further, he demonstrates how useful he has found it in dealing with cases of enteritis. In this condition he administers it diluted with rice water, and has found that it effects a rapid diminution in the number of the stools, leads to a disappearance of blood and mucus therefrom, and abolishes the fever, while the tendency to relapse is decreased. He has reduced by its use the number of sick days by one-half, and finds no drawback to its employment in those cases which are frequent among men serving in the trenches. The author commends the extensive use of condensed milk already in operation in the British Army in France.

#### TREATMENT OF MALARIA.

*La Presse Médicale* of 10th May 1917 contains a paper, by R. A. Gutman, on malaria from the therapeutic point of view. Quinine naturally claims the bulk of the author's observations, and he draws some useful conclusions from his work on many cases. He states that he has so far seen no case which has resisted proper doses of quinine, and that he has seen no sign of hæmolytic action from its employment. It is necessary, he says, to give at least 30 grs. daily for three days in doses of 15 grs. morning and evening, when invariably the fever yields. He maintains twice weekly, so long as symptoms tend to reappear, a dose of 15 grs. The channel of administration is not important, and equally good results attend its use in large enough doses, be the channel of administration the mouth, muscles, or veins. No reference is made to what salt of quinine the author prefers, and one gathers that this does not matter much. One has the feeling, however, that the acid hydrochloride is the best salt.

## COLLOIDAL SULPHUR IN CHRONIC ARTICULAR RHEUMATISM.

Jeanneney, in *Le Progrès Médical*, 21st April 1917, records a case of chronic articular rheumatism of the spine, hip, and knee where injections of colloidal sulphur effected a cure. The case was that of a young man of 26 years, who gradually developed this condition, and who came under the author's observation after his joints had become ankylosed and rendered the patient helpless. Injections of small doses of colloidal sulphur in sets of ten injections over ten days, and administered intravenously, gradually brought about this good result. The injections were stopped for intervals of a week between each series. This single case is published as supplementary to the already published results obtained by Loeper, Vahram, and Berthomieu with the same agent.

## SULPHUR AND MERCURY IN SYPHILIS.

The association of sulphur and mercury in the treatment of syphilis is dealt with by Loeper, Bergeron, and Vahram in *Le Progrès Médical* for 27th January 1917. Colloidal sulphur and colloidal mercury were used in doses of  $\frac{1}{2}$  mgrm. of the former and  $\frac{2}{3}$  mgrm. of the latter, but mercury biniodide and cyanide have also been used. Intravenous injections have been found most active, and the effects have been excellent, and at all stages of the disease. Of 166 cases 80 per cent. have been very good results, 10 per cent. good enough, and in the remainder poor or nil. The effect is often very quickly established—in 1 per cent. 3 injections, 2 per cent. 4, 50 per cent. 8 made a very appreciable improvement, and 50 per cent. were cured at the tenth injection. Control of the results was maintained by the Wassermann reaction, and this remained absent after four months without further treatment in certain of the cases. The authors hold that the sulphur is useful in assisting the action of mercury, making the therapeutic results more rapid, and diminishing the tendency to mercurialism. They also believe that the sulphur has specially good effects on cutaneous and corneal lesions and on arteritis. No theoretical explanation is advanced as to the beneficial association of sulphur with mercury, and the investigators content themselves with stating their clinical experiences.

## TETANUS.

Some observations on tetanus occurring among wounded soldiers already treated by prophylactic injections of antitetanic serum are contained in a contribution by Dr. Auguste Lumière to the *Annales de l'Institut Pasteur* for January 1917. Clinical details are supplied by the author, whose conclusions may be summarised thus—(1) Preventive injections of antitetanic serum do not possess an absolute or complete prophylactic action in all cases. (2) The duration of

immunity conferred cannot be specified, as it depends on the relative proportions of toxin and antiserum present in the patient at a given time. (3) Cases of tetanus occurring after administration of serum appear to be due to one of two principal causes, viz. excessive amount of toxin in the neighbourhood of the wound, and out of proportion to the amount of serum injected, or the liberation of spores, lying hitherto latent in the tissues, by a surgical procedure or another trauma after the activity of the injected serum has passed; such cases are, of course, late in making their appearance. (4) It has been found that some of these cases have not been thoroughly purified, deprived of foreign bodies, and drained at the time of injection. (5) A second dose of serum has been followed by beneficial results. (6) The clinical symptoms are modified to some extent by the initial serum, and in quite a number of patients no central nervous symptoms developed, in which cases a good prognosis was possible. Injections of sodium sulphate have been found by the author to be useful as adjuvant treatment, especially in the presence of spasmodic contractions, and he seems to prefer it to morphine and chloral hydrate.

#### BENZOL IN LEUKÆMIA.

Harris Weinstein, in the *New York Medical Journal* for 17th February 1917, draws attention again to the use of benzol in the treatment of the leukæmias. He alludes to the discovery of von Koranyi, that among girls working in benzol there occurs an initial stimulation of leucocytic bone-marrow, followed by a hypoplasia of that marrow, with a series of gastro-intestinal symptoms which are not germane to the present article. Benzol exercises in leukæmia a marked hypoplastic action, slowish in development, but progressive, and going on for some time after cessation of the administration of benzol. Care has to be taken that benzol is not given for too long a time, therefore; and when the white blood-count has come down to, say, 20,000 per c.mm. the drug should be discontinued. Weinstein points out that X-rays act more quickly in reducing the white blood-cells and the size of the spleen than does benzol, and he suggests that the combination of the two agencies might be made with advantage, provided that care is taken not to prolong the action of either or both unduly. It is recommended that three doses daily of 0.3 gm. each be given in a little olive oil, and that the dose be slowly advanced to 2 grms. daily. The duration of medication depends on the results obtained, always with regard to the effect of the drug on the white cells after its administration has been stopped.

J. O.

## PATHOLOGY.

UNDER THE CHARGE OF

THEODORE SHENNAN, M.D., AND JAMES MILLER, M.D.

THE EMPLOYMENT OF THE FLESH OF TUBERCULOUS ANIMALS  
AS HUMAN FOOD.

IN view of the proposals made by some public health authorities to utilise the flesh of tuberculous slaughter-house animals, after careful sterilisation, as a cheap food for man, Dr. Chaussé's researches on "The Virulence of Muscle and of Lymphatic Glands, Apparently Healthy, in Generalised Tuberculosis of Cattle and Pigs" are of interest (*Ann. de l'Inst. Pasteur*, January 1917, p. 1).

Many experimental investigations of muscle from tuberculous animals and from human beings who have died of tuberculosis have been conducted, the methods of infecting the laboratory animals being either by way of the alimentary tract, or by inoculation into the peritoneal cavity, or by subcutaneous injection.

Chaussé points out that most of these have been carried out under faulty conditions, so that the results in many instances are of doubtful value. For example, he has proved by experimental work, in great part unpublished as yet, that even the guinea-pig proves resistant to several millions of virulent tubercle bacilli administered by way of the alimentary tract, and to a much larger (comparative) dose of virus if this consist of tuberculous material in coarse subdivision; and that the rabbit also is highly resistant to small doses of such virus. He objects to intraperitoneal inoculation, because of the highly phagocytic properties of the peritoneum; and the same objection applies to the intravenous route. Further, contamination of the external surface of portions of muscle used for inoculation has not always been sufficiently guarded against.

The results obtained by inoculation of human material have frequently been positive, but it is questionable if these are applicable in the case of slaughter-house animals which are often in apparently good health, in spite of the malady. Moreover, when the human material is inoculated along with the blood contained, it is undoubtedly the blood which conveys the pathogenic agent.

Chaussé's material for investigation was taken from the carcasses of eighteen pigs and forty-two cattle, condemned because of massive tuberculosis, with very evident generalisation, shown by the presence of lesions in lungs, serous membranes, liver, kidneys, bones, or lymphatic glands of the extremities. In the pig the bacilli invade the blood at an early stage, and they determine multiple miliary eruptions,



particularly in the lungs, liver, and spleen; whereas in cattle generalisation is, as a rule, apparently less free, for the tubercles in the various organs are less numerous.

The pieces of muscle employed were all thoroughly cauterised superficially, and then small portions cut out from the interior, with aseptic precautions. They were ground up with sand, and a little water added. The rose-coloured fluid obtained in this manner contained the muscle juices and a great number of dissociated muscle fibres. Two to 3 c.cm. of this were inoculated subcutaneously into each guinea-pig, three to five animals being used for each sample of muscle.

In the case of pigs the adductors of the thighs were selected, and in cattle the corresponding adductors, or the psoas, and sometimes the long dorsal muscles.

Sixty specimens were tested. The greater number of the animals were killed on the forty-fifth day after inoculation.

Not one of these animals showed any trace of tuberculosis when dissected.

An obvious criticism is that the investigation of individual animals was apparently limited to one small area. The author might with advantage have inoculated tissue taken from several different parts of the muscular system.

Chaussé also inoculated portions of apparently healthy peripheral lymphatic glands taken from similar condemned carcasses. In the case of twenty-four pigs and eleven cattle these proved positive, but the tuberculosis induced was of fairly mild type.

He concludes that such flesh would not be infective, even if consumed in the raw state, thus verifying the opinions of Nocard and of MacFadyean that muscle is particularly resistant to tuberculous infection, and is able to dispose of the bacilli; but that ingestion of the glands, unless sufficiently cooked, is not without danger. If the glands be carefully removed, the muscles might with perfect safety be employed as a food product; though he recognises that, in view of popular prejudice against the use of such material, scientific proof of its harmlessness is of little avail. The paper is a little ill-balanced but very suggestive, and the results are worth verification.

#### THE ETIOLOGY OF ACUTE POLIOMYELITIS.

Recent investigations have tended to raise doubts as to the true nature of the *etiological factor* or factors in this disease, and before proceeding to mention still more recent researches which appear to rehabilitate the filterable virus of Flexner and Lewis, Landsteiner and Levaditi, it may be advisable to review the progress which has been made in our knowledge of the causal organism. Not having access

at present to the original papers, some of the facts are taken from a digest by Dragotti in *Il Policlinico* (28th January 1917, p. 135).

Landsteiner and Popper, in 1909, were the first to transmit poliomyelitis to monkeys by means of intraperitoneal inoculation of portions of brain and cord of individuals who had died of the disease. Shortly thereafter, Flexner and Lewis in America, and Landsteiner and Levaditi in Switzerland, working independently, demonstrated that the specific agent of poliomyelitis was an ultra-microscopic, filterable virus. Flexner and Noguchi, in 1913, succeeded in cultivating and seeing under the microscope minute filterable micro-organisms—"globoid bodies"—with which the disease could be reproduced in the monkey.

Kling, Petterson, and Wernsted produced the disease in monkeys by injecting washings of the nasal cavities, of the fauces, and of the intestinal tract of individuals who had died of the disease. These and similar researches were generally accepted as having settled the question of the nature of the causal organism and the portals by which it gains access to the human body.

But Mathers, in 1916, announced the discovery, in brain and cord from fatal cases, of a pleomorphic coccus, which, inoculated into rabbits, produced paralytic manifestations; and although Mathers' results were received with some scepticism, other investigators were able to confirm them. The suggestion was made that the virus under different conditions assumed either a filterable or a non-filterable form, thus placing the causal agent on a footing similar to that claimed for the virus of rabies.

Rosenow, Towne, and Wheeler then reported the discovery of a special streptococcus, isolated from the fauces, tonsils, tonsillary abscesses, and central nervous system of poliomyelitics. Intravenous injection of these streptococci produced in various species of animals paralytic symptoms and corresponding lesions of the grey matter of the central nervous system. The organisms were again isolated in pure culture from the nervous system of the animals, though all other tissues were sterile. The size of the cocci varied with the conditions of cultivation. A further interesting fact was that subcultures containing large cocci could be obtained from Berkefeld filtrates of cultures of this organism. These subcultures could infect animals.

The authors concluded that the specific agent of poliomyelitis assumes the filterable form under anaerobic conditions, but that under other conditions the same organism may assume altered forms, dimensions, and virulence.

Nuzum and Herzog obtained similar results, producing in the monkey the clinical picture of poliomyelitis and in dogs and young rabbits flaccid paralysis.

As regards the *portal of invasion*, a considerable number of authors

favour passage by way of the blood-stream ; but against this hypothesis has to be placed the statement that in man, at least in the early stages of the disease, the blood is never infective.

Others hold that the virus travels along the perineural lymphatics. In favour of this theory is the fact that in the experimental disease the first, though not the only, muscles paralysed are those into which the virus has been injected.

Many theories exist as to the mode and vehicle of *transmission of the virus*, whether direct or indirect, between the diseased and the healthy, but one need not go into these on the present occasion.

A series of papers in the *Journal of Experimental Medicine* (April and June 1917) deal with some of the observations already referred to.

Amoss (*loc. cit.*, April, p. 545) reports success in cultivating "globoid" bodies, identical with those described by Flexner and Noguchi in 1913. After prolonged cultivation outside the body they develop saprophytic properties and then grow more readily on artificial media. Under certain conditions they form long chains like streptococci.

Reference has been made to the streptococcus, isolated from cases of poliomyelitis by different investigators, which is capable of setting up in inoculated animals clinical and pathological states, which these authors identify with those found in poliomyelitis in man, and in experimental poliomyelitis induced in monkeys by inoculation of the filterable virus described by Flexner and Lewis, Landsteiner and Levaditi. While it is not denied that the filterable virus is in all probability the exciting cause of the disease in man and in the monkey, the particular question which has arisen is the relation of the streptococcus to the filterable organism. Bull (*loc. cit.*, April, p. 557) isolated streptococci from the tonsils of thirty-two cases of the natural disease, and from the brains and cords of monkeys which died from the inoculated disease. He failed in every instance to reproduce any condition resembling poliomyelitis clinically or pathologically in guinea-pigs, dogs, cats, rabbits, or monkeys, and concludes that there appears to be no etiological or pathological relationship between streptococci and epidemic poliomyelitis in man, or true experimental poliomyelitis in monkeys.

Kolmer, Brown, and Freese (*ibid.*, June 1917, p. 789) give a short *résumé* of the various organisms isolated from the brain and cord in cases of poliomyelitis, and relate the results of their own investigations of similar organisms.

They isolated streptococci, diplococci, diphtheroids, and various Gram-negative bacilli. Intracranial, intravenous, and intraperitoneal inoculation of cultures of these organisms failed to produce paralysis in rabbits or in monkeys.

With two exceptions all the cultures inoculated were transplants from the original anaerobic ascites broth kidney cultures of cerebro-



spinal fluid, and of brain and cord. Arthritis and meningitis were induced by the streptococci, but there were neither clinical nor pathological evidences of poliomyelitis. They agree with those authors who regard these organisms as secondary and probably terminal invaders.

It will be noted that the interesting observations on the pleomorphic organism, which apparently has a filterable phase, described by Rosenow, Towne, and Wheeler, and by Nuzum and Herzog, have not been refuted.

Some interesting points as to the *serum treatment* and incidentally to the *channels of invasion* in poliomyelitis have been brought out by Flexner and Amoss (*Journ. Exper. Med.*, April 1917, p. 499).

They show that injection of horse serum into the cerebro-spinal meninges increases their permeability, so that they permit immunity neutralising principles, passively introduced into the blood-stream, to pass into the cerebro-spinal fluid. This apparently takes place only when the inflammatory reaction induced by the horse serum is at its highest point.

Nothing definite can yet be stated as to the therapeutic effect of normal serum in man, except that probably any benefit which may arise from its employment would be attributable not to the action of the serum as such, but to the passage into the cerebro-spinal fluid of immunity principles circulating in the blood, made possible by the aseptic inflammation set up by it in the meninges. As the immunity principles appear in the blood only after several days, and the reported favourable effects of the immune serum treatment relate to the first days of illness, the employment of normal serum is thus not indicated, while that of an immune serum is.

In addition (*ibid.*, p. 525), Flexner and Amoss show that any material which irritates, inflames, or even slightly alters the integrity of the meninges or choroid plexus diminishes or abolishes their protective function. The changes induced may be too slight to be detected by chemical or cellular changes in the cerebro-spinal fluid, or by morphological alterations in meninges or choroid plexus.

#### THE VIRULENCE OF DIPHTHERIA BACILLI SEPARATED FROM DIPHTHERIA PATIENTS AND FROM CARRIERS.

Dr. Weaver (*Journ. Infect. Dis.*, February 1917, p. 125) isolated diphtheria bacilli from thirty-six patients and from fourteen carriers, and tested their virulence. He concludes that such strains are practically always virulent, and remain virulent up to the time of their disappearance, even though a long time has elapsed. Carriers should therefore be kept in isolation until the bacilli have been got rid of, or until the strains cultivated have been proved non-virulent. Cultures should be made from the nose as well as from the throat in



all suspected cases. He thus confirms the work of Graham Smith and others.

TYPHUS EXANTHEMATICUS (Baehr and Plotz, *Journ. Infect. Dis.*, February 1917, p. 201).

The blood cultivation studies which form the basis of this report were conducted in the Balkans, in Volhynia, and in Galicia by permission of the German, Austrian, and Bulgarian military authorities.

In thirty-six cases out of sixty-four an organism was separated identical with that first described by Plotz in 1914.

The culture medium is a special acid glucose agar containing ascitic fluid, and used anaerobically. The micro-organism is a slender rod, somewhat like the influenza bacillus, but Gram-positive. Colonies appear after about three days, and thereafter grow rapidly. All the strains were agglutinated in high dilutions (up to 1:1600) by the serum of typhus convalescents. They also gave strong complement-fixation with convalescents' serum. Up to the present this organism has been isolated from cases of typhus occurring in the United States, Mexico, Serbia, Bulgaria, Austria, and Russia.

HENLE'S REACTION OF THE CHROMAFFIN CELLS IN THE ADRENALS, AND THE MICROSCOPIC TEST FOR ADRENALIN (T. Ogata and A. Ogata, *Journ. Exp. Med.*, June 1917, p. 807).

After an historical survey of the discovery made by Henle of the brown colouration of the medullary cells of the adrenal when fixed in a solution of potassium bichromate, and the numerous researches based upon this discovery, some of which claim that the functional capacity of the adrenals is shown by the depth of staining after treatment of the tissue with the bichromate, the Ogatas detail their own investigations, which go to prove that the brown substance produced is not a complicated organic compound but a simple inorganic one, namely, chromium dioxide ( $\text{CrO}_2$ ). The reaction is merely the result of reduction by adrenalin, and a similar reaction occurs when silver salts or osmic acid are substituted for the chromic one.

They are of opinion that the name given to the cells giving a positive reaction should not be based upon the reaction (*i.e.* "chromaffin cells"), but upon the presence of the reducing agent—adrenalin—and propose the terms "adrenalin cells," "adrenalin tissue," "adrenalin system."

T. S.

## NEW BOOKS.

*Surgical Therapeutics and Operative Technique.* By E. DOYEN. English Edition, prepared by the Author in Collaboration with H. SPENCER-BROWNE, M.B., Chef de Clinique de l'Institut Doyen. Vol. I. Pp. x. + 782. With 1038 Illustrations. London: Baillière, Tindall & Cox. 1917. Price 25s. net.

THIS is to some extent a posthumous work, as it is not a mere translation of the original French edition but embodies the material which M. Doyen had designed for a new edition shortly before his lamented death. Dr. Spencer-Browne, who was closely associated with the author in preparing the revised edition, has translated it and issued it in English, and, let us say at once, has done it with extraordinary ability. It is proposed to present the English edition in three volumes, which, when completed, if we may judge by the instalment before us, will form a worthy memorial of one of the great French surgeons of the twentieth century.

M. Doyen disarms criticism of his sublime egoism by admitting it; and if we recognise his attitude, there is much to be said for a purely personal presentation of a subject in which the writer was undoubtedly a master. The reader is free to add the pinch of salt when he finds it necessary, but it will only add zest to an already savoury meal.

After paying the traditional tribute to the antiseptic system and its originator, but with more than the conventional obeisance, the author goes on to indicate the other factors that have contributed to the advance of modern surgery—the growth of the science of bacteriology, the discovery of the Röntgen rays, the improvements in the surgical armamentarium based upon physical and mechanical principles, and the organisation of operative details embraced under the general term technique.

It is interesting to find the designer of so many complicated implements say that "the first 'cold' chisels which can be described as well formed and convenient to handle are those designed by MacEwen (*sic*) for the operation of osteotomy. They were designed with consummate skill and the type became definitive." (When will writers learn that this distinguished surgeon's name is spelled as if it were pronounced Mace-wen?) M. Doyen sums up the conflict between "asepsis" and "antisepsis" admirably when he says, "But asepsis is no other than cleanliness, carried out to the stage of extermination of pathogenic germs. It cannot be separated from antisepsis, for it cannot be realised on the surface of the body, or on instruments and dressings, but with the aid of antiseptic agents—that is to say, of chemical and physical disinfectants."

The second part of the introductory chapter consists of a brief résumé of the history of French surgery designed to illustrate the changes brought about by the introduction of anaesthesia and antiseptis. "All conquests have their shaded aspects," says Doyen, and the introduction of antiseptic methods was attended with a reaction against the brilliant methods and the manual dexterity of the older surgeons. The absence of suffering under anaesthesia, and the attempt to secure absolute hæmostasis by applying innumerable ligatures prolonged operations unduly and led many to undertake surgical work for which they had neither the training nor the aptitude. Doyen's plea is for preserving the operative dexterity of the surgeons of former times in alliance with antiseptis. There is no false modesty in the way he presents his case by tracing his own evolution as an operator. His father had always held before him the brilliant example of Maisonneuve as an ideal. "Learn to operate as he did, without assistants; place your knives within reach, take up each instrument in its turn with your own hand, even down to the last ligature. A good surgeon should never depend on those who surround him; it is thus that you can attain the desired end of operating *cito, tuto, et jucunde*." How he did it is the *Leitmotif* of this section.

"The Author's Surgical Home" is the heading of the next chapter, which opens with a paragraph that would do credit to the advertisement writer of a modern first-class hotel. "This Institute is unique in its class . . . the patient is induced to feel that he is not in a clinical institution." (The illustrations will speedily disabuse him of this idea.) "The comforts of home are provided while in receipt of every professional care which the case demands. . . . The first-class bedrooms are luxuriously fitted up, the framework of each bed is of copper . . . each patient has within reach an electric bell and a switch."

Doyen's views on hæmostasis are well known, and the instruments he devised to secure it are in everyday use. The chapter on this subject gives the most complete historical account of hæmostasis with which we are acquainted. It abundantly demonstrates how deeply he had studied the subject, and makes prominent the amount of care and thought he devoted to the elaboration of his instruments.

It is supplemented by a description of the various instruments and apparatus constructed according to the designs of the author—from tongue forceps to craniectomy saws and operating tables—which further proves his extraordinary mechanical ingenuity. It must be admitted that not a few of the instruments figured are but modifications of classical patterns used by generations of surgeons before Doyen.

The fourth chapter, dealing with "The Operation," is a defence of the author's well-known thesis that rapidity is the first essential of good operating. "The term *speed* should not be taken in the sense of *precipitation*. . . . In no case should the surgeon *hasten*, in the



literal sense. . . . The poet's metrical commandment, '*festina lente*,' is peculiarly applicable in surgical procedure."

Considerations of space forbid that we should follow the author through all the details of general operative technique, which occupy about 200 pages of the volume. They are fully, even discursively, dealt with, and are so amply and clearly illustrated that the reader can readily grasp all the writer's points.

Part II. is devoted to Regional Surgery, the section on operations on the head only being included in the present volume. Craniectomy receives a large share of attention, the author's own operations being fully described.

The publisher's share in the production of the volume leaves nothing to be desired; the type is clear, the illustrations are of the first order. We look forward with pleasure to the succeeding volumes of this great work on operative surgery.

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*Notes on Military Orthopædics.* By Colonel ROBERT JONES, C.B.  
Pp. xi. + 132. With 128 Illustrations. London: Cassell & Co., Ltd. 1917. Price 2s. 6d. net.

THE specialty of "orthopædics" has never been very clearly defined; its limits have varied in different countries, and even in different parts of the same country. It has long since overstepped the boundaries set to it by etymology, and the war has given it a still greater extension. A large proportion of the wounded reach a stage in recovery when their further progress can only be effected by the means at the disposal of an "orthopædic department." These include not only plastic and reparative operative measures, and the use of electricity and massage, but also the systematised exercises obtained by performing productive work in "curative workshops."

The book before us reflects the practice of the various orthopædic centres established throughout the country under the direction of our leading orthopædic surgeon, Colonel Robert Jones, to whom we take this opportunity of offering our congratulations on the honour recently conferred upon him.

In his preface Sir Robert Jones emphasises the value of the final stage of the orthopædic régime—the curative workshop training—and anyone who has observed the rapid improvement that follows a course of interesting work designed to bring into use impaired muscles and joints must recognise the advantages of this system over that of exercises with mechanical apparatus of the stationary bicycle and spring dumb-bell type.

The text is concerned with the more purely surgical aspects of orthopædic treatment. A useful and suggestive chapter on the positions of election for ankylosis following gun-shot injuries of joints is followed by another on nerve suture and tendon transplantation.



The common deformities of the foot, especially as they affect soldiers, is particularly useful. Malunited and ununited fractures, bone-grafting, and disabilities of the knee are next dealt with, and the final chapter is devoted to the mechanical treatment of fractures under war conditions.

To say that the book is practical, authoritative, and clearly written is only to say that it is written by Robert Jones.

*The Treatment of Joint and Muscle Injuries.* By W. ROWLEY BRISTOW, F.R.C.S. Pp. xii. + 148. With 38 Illustrations. London: Henry Frowde and Hodder & Stoughton. 1917. Price 6s. net.

THIS work deals with a limited aspect of orthopaedic surgery—the treatment of sprains and simple injuries of joints and muscle-wasting by the method of graduated contraction. The production of rhythmical and graduated contractions of definite muscles and groups of muscles is the very essence of this method, which consists in stimulating the muscles to contract by an induced (faradic) current, and graduating the contractions both as regards degree and rhythm. In this procedure any general effects of electricity on the patient may be entirely disregarded; the electric current is merely a convenient means of obtaining the contractions.

The technique of the treatment by graduated contraction is minutely described, and its application to such conditions as acute sprain, chronic sprains, peripheral nerve injuries and fractures is exemplified. Separate chapters are devoted to fractures and dislocations, and to treatment by massage and exercises and heat. The author employs medical gymnastics and exercises with apparatus.

His thesis is well supported, and the work should be in the hands of all who are concerned with the treatment of such injuries as the method of treatment is adapted to. It is well illustrated and has a comprehensive index.

*The Causes of Tuberculosis, together with Some Account of the Prevalence and Distribution of the Disease.* By LOUIS CORBETT, M.D., F.R.C.S., University Lecturer in Pathology, Cambridge. Pp. xvi. + 707. With 31 Illustrations. Cambridge: At the University Press. 1917. Price 21s. net.

THIS volume on the causes of tuberculosis is a remarkable expression of the times. Only thirty-five years have passed since the discovery of the tubercle bacillus, yet, with the exception of a small amount of preliminary matter of more general bearing, hardly a paragraph of the book could have been written prior to 1882. So completely has the outlook changed. The etiological chapters which figured in pre-bacillary treatises on tuberculosis have been largely erased.

The starting-points for the discussions now presented are especially the two announcements of Koch (1) in 1882, regarding the tubercle bacillus as the essential cause of tuberculosis, and (2) in 1901, to the effect that human tuberculosis differs from bovine and cannot be transmitted to cattle, and that bovine tuberculosis is not transmissible to man, or is so rarely transmitted that the danger may be safely ignored.

The author writes as an experimental pathologist, not as a clinician. The result is a digest of the vast amount of pathological research which has followed on the two pronouncements to which reference has been made. More particularly, the volume affords a summary of the important work overtaken by the Royal Commission on Tuberculosis in this country, the Department of Health of the City of New York, and the German Imperial Board of Health.

The types of tubercle bacilli, especially those occurring in man, are considered in detail. The author allows that our knowledge regarding the relationships of these is not yet complete. The acceptance of three main varieties or types is convenient and is justified by present evidence. Their distinguishing characters, resulting from adaptation to particular animal species, or groups of species, are sufficiently fixed to be regarded as stable. The test of stability is hardly exhaustive, corresponding as it does merely with the duration of laboratory observations. So far as the evidence extends, these go to show that bovine tubercle bacilli do not in the ordinary course of disease become changed into human tubercle bacilli.

In this connection the facts which have emerged in relation to lupus are carefully weighed. Both human and bovine types have been traced in the lesions of lupus, and most of the strains of tubercle bacilli so occurring show less virulence to particular animals than that normal to their type. As has been pointed out more than once, the lupus lesions afford scope for research which seems pregnant with important discoveries both from the etiological and therapeutic side.

Of special interest is a short account given in the appendix of a new subtype of tubercle bacilli met with by Eastwood and F. Griffith, which, in view of their atypical characters, may be divided into two groups conveniently described as (1) dysgonic humans and (2) attenuated bovines. To what extent such atypical strains are to be regarded merely as accidental variants cannot meantime be decided. Observations of the sort naturally raise the question to what extent the characters, growth, and virulence of tubercle bacilli are unstable throughout, and whether we may not be insisting too rigidly on a classification which, however convenient, has no exact scientific warrant.

Dr. Cobbett examines with much candour and critical acumen the evidence submitted by different observers in support of the view that infection of the human species by bovine bacilli is commoner in some

places than in others. The evidence suggests that it is unusually high in Scotland and low in Germany. The subject continues, in the opinion of the author, still *sub judice*. He holds that the recent evidence from Edinburgh, especially that regarding bones and joints, must be more definitely confirmed before final determination of the issue.

The volume is rich in facts, which are well summarised, and the statements are judicial throughout. It is unique in this country as a guide through the perplexing maze of rapidly accumulating pathological research regarding tuberculosis. It is pleasantly written and abundantly illustrated with excellent plates.

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*Midwifery.* By Ten Teachers. Under the Direction of COMYNS BERKELEY, M.A., M.D., M.C.(Cantab.), F.R.C.P.(Lond.), Obstetric and Gynecological Surgeon to the Middlesex Hospital, etc. Edited by COMYNS BERKELEY, H. RUSSELL ANDREWS, and J. S. FAIRBAIRN. Pp. 736. Illustrated with 303 Figures. London: Edward Arnold. 1917. Price 18s. net.

If this text-book of midwifery becomes popular amongst students and practitioners, as any scientific work which appears during the war almost deserves to become, it will probably be known as the Ten Teachers or simply as the T. T. Midwifery. The ten are all teachers in London medical schools, and most of them have had experience as examiners; their names are given on the page following that carrying the title, and it is learned from the preface that the manuscript of each was sent to all and that meetings were held to criticise, amend, and rewrite. The idea is somewhat new in text-book writing, but it seems sound, although one can fancy some little disagreement on occasion, unless, indeed, the teaching of the London schools is of a remarkably uniform kind. But out of the ten three were chosen to edit the work, and then out of three stood forth one to direct. The scheme, although novel, seems to have worked very well, and the result is a book which London undergraduates and students will find valuable to them.

It is difficult to introduce novelties in the arrangement of the matters discussed in obstetric text-books, and the present scheme is the favourite one of discussing, first normal pregnancy, then abnormal; next, normal labour and abnormal, and so on, placing operative procedures and anaesthesia at the end. There is a special chapter on the use of pituitary extract in labour, and the ten teachers rightly advise with caution regarding its employment. It is rather startling to find five whole pages devoted to "twilight sleep" and only a few lines to chloroform and ether, for it will undoubtedly throw these means of anaesthesia and analgesia into a wrong perspective in the student's mind. The five pages had better have been published as an article in



a medical journal, for they are addressed rather to the post-graduate, who wishes to be aided in deciding whether or not to use morphia-hyoscine, than to the undergraduate, who is looking for a firm opinion and definite instruction. The more purely obstetrical chapters are well and clearly written, and one is favourably impressed by the moderation and caution shown in dealing with vexed questions, such as the management of eclampsia in respect of *veratrum viride*, morphia, operative treatment, and the like. There is a strong, sane note of safety in the whole work. The illustrations are well chosen and really helpful in most cases; but we cannot but regard both the method of management of the birth of the head and the diagram showing it with suspicion. Doubtless it is the plan prescribed for midwives, but that does not make it the best or the safest in our opinion; possibly the anus is left uncovered for pictorial purposes, but the position of the left arm and hand is such as to introduce risks whilst failing to control in any real sense the progress of the head. In the case of internal manipulations the hands are shown in rubber gloves, a circumstance which we suppose indicates that the London obstetric school is trusting to this means of asepsis. These are smaller matters, however, and the book can be regarded as a thoroughly useful and reliable guide.

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*Shell-Shock and Its Lessons.* By G. ELLIOT SMITH and T. H. PEAR.  
Pp. xi. + 135. London: Manchester University Press and  
Longmans, Green & Co. 1917. Price 2s. 6d.

THE war has brought into intimate contact with medicine many who previously stood only on its borders or were altogether without its bounds. The book before us is the result of this contact. One of our leading anatomists and ethnologists, and one of the most brilliant of the younger generation of psychologists, have been so impressed by the lessons to be learnt from the psycho-neuroses of the war that they have written this book. It is designed primarily for the laity, though there are few followers of medicine who will not learn much from its pages.

There is no question that this country, which at one time stood in the van of progress in regard to mental disorder, now lags far behind most other civilised countries in this respect. This is due to certain well-defined causes, and especially to the sharp line of separation between neurology and psychiatry which does not exist in other countries.

The authors give an account of the psycho-neuroses arising out of the war for which they have adopted the popular but inappropriate term *Shell-Shock*. They give an excellent account of the modes of treating these states, and then proceed to point out the lessons to be drawn. Though both authors have studied the subject at first hand,



they have very wisely not been content to trust to their own experience. There is hardly a statement in the book which is not supported by extracts from the reports of committees, and from clinical articles both of our own and other countries. One of the most useful portions of the book to the physician is formed by extracts from the works of German authorities on war-neurosis which are not generally accessible.

The most important aim of the book is to influence the attitude of the public towards mental disorder and to help towards the removal of the social stigma which at present attaches to it. At the present time this stigma is directly fostered by the organisation of our hospitals and asylums. This organisation must be fundamentally altered if we are to hope for any improvement. Since this alteration can only be brought about by the recognition of the nature of existing evils on the part of the general public, the authors are fully justified in their efforts to instil into this public the elements of the medical aspect of the problem.

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### NOTES ON BOOKS.

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IN these days of overstrain, when little time can be found for reading more of the current medical journals that immediately interest one, the *Medical Annual* (John Wright & Sons, Ltd., price 10s. net) is doubly welcome. The experienced staff who co-operate with the editor have spared no pains to summarise the very considerable output of medical writing that still appears, in spite of the preoccupation of so many workers with military and other duties arising out of war conditions. Naturally the war itself has given rise to many contributions to medical literature, and the present issue of the *Annual* affords a readily consulted *résumé* of all that is of value. With the aid of the index the reader will find in a few minutes the gist of the work published in 1916 on any subject on which he may want information. A striking effect of the war, which is evidenced in these pages, is the stimulus it has given to our manufacturing chemists to provide us with many of the pharmaceutical products for which we previously relied upon German makers. The illustrations are fully up to the high standard to which we are accustomed in the *Medical Annual*.

In his brochure, *Dangers in Neck-Wear* (H. K. Lewis & Co., Ltd., price 4s. 6d. net), Dr. Walter G. Walford gives his reasons for believing that half, if not all, the evils that flesh is heir to arise from wearing tight collars. Some of his illustrations of the dangerous effects of constricting the neck are quite convincing, particularly those derived from the practice of that artist in neck-wear, the late Mr. Calcraft; but when he gravely cites cases of fracture of the tibia that had failed to unite until the patients took to Byronian collars, we begin to doubt.

The mental peculiarities of George III. were, according to the author, directly due to the fashion in collars that he affected—a fact which he is “not aware has ever been previously pointed out.” It may yet not be too late to slacken the neck-wear of some of his continental compeers—or to tighten it. Time will show whether the prevailing cult of the “glad-neck” amongst females reduces the incidence of eczema, rheumatism, dental caries, cancer, and phthisis, to mention only a few of the results of tight collars. The author’s plea for this pleasing fashion is ingenious, and apparently ingenuous, but it is not convincing.

REPORTS, TRANSACTIONS, ETC.—The thirty-fourth volume of the *Transactions of the American Surgical Association* (W. J. Dornan, Philadelphia, 1916) opens appropriately enough, as events have developed, with a paper by the President on “Preparedness,” which he defines as—“to increase the efficiency of the military establishment of the United States.” The strength of the medical services of the U. S. Army and Navy is considered in the light of contingencies which were then possible, but have now become actual. The author shows in what respects the medical service of the U. S. Army requires further preparation, and indicates some of the steps necessary to secure it. Time has shown, and shown quickly, that the medical profession in America could rise to the occasion. A number of papers follow on the surgery of war by members who have been engaged with one or other of the belligerent forces. We may expect that in future volumes these will greatly increase. The other contributions to this volume are of the usual high standard.

### BOOKS RECEIVED.

- CALENDAR of the University of Toronto Faculty of Medicine, 1917-18. . . . . —  
 CARTON, WILFRED. *Electro-Therapeutics for Military Hospitals.* (H. K. Lewis & Co., Ltd.) 2s. 6d.  
 ELLIOT, R. H. *The Indian Operation of Couching for Cataract.* (H. K. Lewis & Co., Ltd.) 7s. 6d.  
 EPPINGER, H., and LEO HESS. *Vagotonia.* Second Edition. (Nervous and Mental Disease Publishing Co.) dol. 1.  
 FREYBERGER, L. *The Practitioner's Pocket Pharmacology and Formulary.* (Wm. Heinemann) 12s. 6d.  
 HOPE, E. W. *Report on the Health of the City of Liverpool during 1916.* . . . . . —  
 JORDAN, E. O. *Food Poisoning.* . . . . . (University of Chicago Press) dol. 1.  
 JOSLIN, E. P. *The Treatment of Diabetes Mellitus.* Second Edition. (Lea & Febiger) dol. 4.50.  
 MCGARRISON, R. *The Thyroid Gland.* . . . . . (Baillière, Tindall & Co.) 12s. 6d.  
 MERCIER, C. A. *The Ideal Nurse.* . . . . . (Mental Culture Enterprise) 1s. 3d.  
 MERCIER, C. A. *The Principles of Rational Education.* . . . . . (Mental Culture Enterprise) 2s. 9d.  
 NANKIVELL, A. N. *Health in Camp.* . . . . . (Constable & Co. Ltd.) 1s.  
 PARKES, L. C., and H. R. KENWOOD. *Hygiene and Public Health, Sixth Edition.* (H. K. Lewis & Co., Ltd.) 14s.  
 PRICE-JONES, C. *Blood-Pictures: An Introduction to Clinical Hematology.* (Wright & Sons, Ltd.) 6s. 6d.  
 REPORT of the L.C.C. Medical Officer of Health and School Medical Officer for the Year 1916. (P. S. King & Son, Ltd.) 1s.  
 TRANSACTIONS of the Seventh Annual Meeting of the American Association for Study and Prevention of Infant Mortality. . . . . (Baltimore) —  
 THE Veterinary Review. Vol. I., No. 3. August 1917. . . . . (W. Green & Son) 3s. 6d.

## MEDICAL EDUCATION IN SCOTLAND.

ACCORDING to the Regulations of the General Medical Council, a candidate for a medical qualification must (1) pass a preliminary examination ; (2) register as a medical student ; (3) study for five years at a recognised school ; (4) obtain a degree or diploma ; and (5) place his name on the *Medical Register*. No person whose name is not on the *Register* may legally sign certificates, give medical evidence in Courts, or sue for fees.

The following degrees and diplomas are available in Scotland :—Bachelor of Medicine and Bachelor of Surgery (M.B., Ch.B.), conferred by the Universities. Doctor of Medicine (M.D.) and Master of Surgery (Ch.M.) are higher qualifications conferred only on those who already hold the M.B., Ch.B.

The *Triple Qualification* (L.R.C.P.E., L.R.C.S.E., L.R.F.P.S.G.) is conferred by the two Royal Colleges and the Royal Faculty jointly. The Fellowships, Memberships, and Licences of these Corporations may also be registered as higher or additional qualifications.

Special degrees and diplomas in public health are also granted by the Universities and Corporations.

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### THE UNIVERSITIES.

**PRELIMINARY EXAMINATION.**—Before commencing his course of medical study each student shall pass a preliminary examination in (1) English, (2) Latin, 3 Mathematics, and (4) an additional language—Greek, French, German, Italian, or such other as the Senatus shall approve. In the case of a candidate whose native language is other than English, an examination in another classical language—*e.g.*, Sanskrit or Arabic—may be substituted for Latin, and an examination in the candidate's native language may be substituted for the additional language. A student must pass all the subjects at not more than two examinations. A degree in Arts or Science of any recognised University exempts from the preliminary, and certain other examinations may be accepted as substitutes.

**MATRICULATION.**—Having passed the preliminary examination, the student must, within fifteen days after the commencement of the session, matriculate at the University and pay the fee, which is £1, 1s. for the whole year, 10s. 6d. for the summer session alone.

**REGISTRATION.**—Within fifteen days of commencing his studies he must register as a medical student. He must be not less than sixteen years of age, must have passed the preliminary examination, and must show that he has begun his medical studies.

**THE CARNEGIE TRUST.**—This Trust is prepared to pay the class fees of students (who have passed the specified preliminary examination) for all classes, whether attended within the Universities or in any of the Extra-Mural Schools. It is also prepared to pay the fees for the various special classes given by many of the Lecturers upon advanced and non-compulsory subjects. Applicants (1) must be over sixteen years of age ; (2) must be of



Scottish birth or extraction, or must have given two years' attendance after the age of fourteen at a school or institution under inspection of the Scottish Education Department; and (3) must be qualified by preliminary examination under the ordinances of the Scottish Universities Commission and the regulations of the Joint Board of Examiners, to attend the classes for which payment of fees has been claimed. Schedules of application for admission to the benefit of the Trust are obtainable by written application to the Secretary of the Trust, 14 Hanover Street, Edinburgh.

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## UNIVERSITY OF EDINBURGH.

The University of Edinburgh offers many attractions to the student of medicine. The various departments are well equipped for purposes of teaching and research, and there are ample facilities for clinical instruction. The Royal Infirmary, the Royal Hospital for Sick Children, and the Royal Maternity Hospital are in the immediate vicinity of the University, while the Royal Asylum for the Insane, the Fever Hospital, and the various dispensaries can be reached within half an hour.

Students may attend one half of their classes in the Extramural School, and are thus offered a choice of teachers on the different subjects of the curriculum.

An important agreement between the University and the Royal Infirmary has been reached by which the teaching resources of the latter are more fully available for University students than formerly. The agreement provides that all the senior members of the Infirmary staff (those in charge of wards) become senior University lecturers and examiners, while the assistant physicians and surgeons become University lecturers, and take a share in the clinical teaching. The clinical tutors also take a recognised place in University teaching, and the medical demonstrations are held at a morning hour instead of in the evening.

Since the war broke out a very large number of students and several of the teachers have joined His Majesty's forces. The reduction in numbers has been somewhat proportionate, and with a little rearrangement the teaching has been adequately maintained.

The social side of student life is provided for in many ways. The University Union, with a membership of 1500, has a debating-hall, a library, reading rooms, billiard rooms, and a catering department.

The Royal Medical Society, founded in 1737, offers the student the advantages of an extensive medical library and reading rooms, while in its spacious hall many whose names have since become famous have made their first essay in medical debate. The Australasian Club and the South African Union are the headquarters of students from these parts of the Empire.

The Town and Gown Association provides a number of student residences, which are managed by a committee of the residents.

Women students are now admitted to the systematic lectures and practical classes within the University and to the clinical classes in the Royal Infirmary.

Under a recent regulation attendance on classes of instruction in the various special departments is compulsory. This change has necessitated a rearrangement of the curriculum, and an important regulation was introduced which has the effect of limiting a student's attendance on later subjects of the curriculum until he has passed the professional examinations on the earlier subjects.

Particulars regarding the curriculum will be found in the University calendar or "medical programme," published by James Thin, 55 South Bridge.



It is recommended that students begin study in the Summer Session.  
The curriculum is as follows :—

### FOR STUDENTS BEGINNING IN SUMMER.

<i>First Summer Term</i> —					Hour of Meeting of Class.
Botany	.	.	.	.	8-9
Zoology	.	.	.	.	12-1
Practical Botany	}	On alternate days	{	.	9-11
Practical Zoology				.	10-12
Practical Anatomy (thrice weekly)	.	.	.	.	Afternoon
<i>(Examination in Botany and Zoology.)</i>					

### First Year.

<i>Winter (1st Term)</i> —					
Practical Chemistry (twice weekly)	.	.	.	.	9-11
Anatomy	.	.	.	.	11-12
Chemistry	.	.	.	.	12-1
Physics <sup>1</sup>	.	.	.	.	1-2
Practical Anatomy	.	.	.	.	Afternoon
<i>Winter (2nd Term)</i> —					
Practical Chemistry (twice weekly)	.	.	.	.	9-11
Anatomy	.	.	.	.	11-12
Chemistry	.	.	.	.	12-1
Physics <sup>1</sup>	.	.	.	.	1-2
Practical Anatomy	.	.	.	.	Afternoon
<i>(Examination in Chemistry and Physics.)</i>					

<i>Summer Term</i> —					
Histology	.	.	.	.	8-10 or 11-1
Practical Anatomy.	.	.	.	.	

### Second Year.

<i>Winter (1st Term)</i> —					
Physiology	.	.	.	.	10-11
Practical Physiology (twice weekly).	.	.	.	.	11-1
Practical Anatomy and Demonstrations.	.	.	.	.	
<i>Winter (2nd Term)</i> —					
Physiology	.	.	.	.	10-11
Practical Physiology (twice weekly).	.	.	.	.	11-1
Practical Anatomy and Demonstrations.	.	.	.	.	
<i>(Examination in Anatomy and Physiology.)</i>					

<i>Summer Term</i> —					
Pathology (Practical) (thrice weekly)	.	.	.	.	8-10
Pathology (Morbid Anatomy)	.	.	.	.	10-11
Surgical Out-patients	.	.	.	.	11-12
Clinical Surgery	.	.	.	.	12-2
Practical Materia Medica	.	.	.	.	Various hours

### Third Year.

<i>Winter (1st Term)</i> —					
Medicine	.	.	.	.	9-10
Pathology (Morbid Anatomy)	.	.	.	.	10-11
Clinical Medicine	.	.	.	.	11-1
Materia Medica	.	.	.	.	2-3
Pathology (including Elementary Bacteriology)	.	.	.	.	3-4

<sup>1</sup> The class of Physics meets thrice weekly during the Winter Session.

## Winter (2nd Term) —

	Hour of Meeting of Class.
Medicine . . . . .	9-10
Pathology (Morbid Anatomy) . . . . .	10-11
Clinical Medicine . . . . .	12-1.30
Materia Medica . . . . .	2-3
Pathology (including Elementary Bacteriology) . . . . .	3-4

(Examination in Pathology and Materia Medica.)

## Summer Term—

Out-patients (Medical) . . . . .	11-1
Vaccination . . . . .	3-4
Dispensary Practice . . . . .	Afternoon

## Fourth Year.

## Winter (1st Term)—

Surgery . . . . .	9-10
Midwifery (including Gynecology) . . . . .	10-11
* Sec. A. Diseases of Skin	} 11-12    Clinical Surgery .    12-2
* „ B. Diseases of Eye	
* „ C. Diseases of Ear, etc.	
Dispensary Practice.	} . . . . . Afternoon
Infectious Diseases (once weekly) }	
Anæsthetics. <sup>1</sup>	
Optional Classes. <sup>2</sup>	

## Winter (2nd Term)—

Surgery . . . . .	9-10
Midwifery (including Gynecology) . . . . .	10-11
Sec. A. Diseases of Ear, etc.	} 11-12    Clinical Surgery .    12-2
„ B. Diseases of Skin	
„ C. Diseases of Eye	
Mental Diseases (twice weekly) . . . . .	3-4
Infectious Diseases (if not previously attended) }	} . . . . . Afternoon
Dispensary Practice	
Practical Midwifery	

## Summer Term—

Operative Surgery . . . . .	8-9.45
Public Health . . . . .	10-11
Sec. A. Diseases of Children . . . . .	11-1
„ B. Diseases of Ear, etc.	} 11-12    Clinical Medicine .    12-1.30
„ C. Diseases of Skin	
Forensic Medicine . . . . .	2-3
Infectious Diseases (if not previously attended) . . . . .	Afternoon

(Examination in Forensic Medicine and Public Health.)

\* These classes are held thrice weekly, and on remaining days students must attend Clinical Surgery at 11 o'clock.

<sup>1</sup> A course of instruction is given in each term.

<sup>2</sup> Optional courses are held in the subjects of *History of Medicine* (during the First Term of the Winter Session, twice weekly, 4 to 5 p.m., and may be attended by students who have passed the 1st Professional Examination); *Physical Methods in the Treatment of Disease* (during the First Term of the Winter Session, 4 to 5 p.m., twice weekly, and open to students who have passed the 3rd Professional Examination); *Neurology* (daily at 4 p.m. during the Second Term of the Winter Session, and open to students who have passed the 3rd Professional Examination); *Applied Anatomy* (thrice weekly, from 5 to 6 p.m. during First Term of Winter Session, and students are recommended to take the class in the Fifth Winter).

**Fifth Year.**

*Winter (1st Term)—*

	Hour of Meeting of Class.
Clinical Gynecology . . . . .	10-11
Sec. B. Diseases of Children . . . . .	11-1
„ A. Diseases of Eye 11-12 Clinical Medicine . . . . .	12-1.30
„ C. Clinical Medicine or Clinical Surgery.	
Dispensary Practice }	Afternoon
Practical Midwifery }	
Optional Classes.	

*Winter (2nd Term)—*

Clinical Gynecology . . . . .	10-11
Sec. C. Diseases of Children . . . . .	11-1
Secs. A. and B. Clinical Medicine or Clinical Surgery . . . . .	12-1.30
Dispensary Practice }	if not previously attended . . . . . Afternoon
Practical Midwifery }	

*Summer Term—*

Clinical Work in Hospital.

(*Examination in Midwifery, including Gynecology, Surgery, and Medicine, and corresponding Clinical Examinations.*)

**FOR STUDENTS BEGINNING IN WINTER.**

**First Year.**

*Winter (1st Term)—*

Practical Chemistry (twice weekly) . . . . .	9-11
Anatomy . . . . .	11-12
Chemistry . . . . .	12-1
Physics . . . . .	1-2
Practical Anatomy (thrice weekly) . . . . .	Afternoon

*Winter (2nd Term)—*

Practical Chemistry (twice weekly) . . . . .	9-11
Anatomy . . . . .	11-12
Chemistry . . . . .	12-1
Physics . . . . .	1-2
Practical Anatomy (thrice weekly) . . . . .	Afternoon

(*Examination in Chemistry and Physics.*)

*Summer Term—*

Botany . . . . .	8-9
Zoology . . . . .	12-1
Practical Botany }	On alternate days {
Practical Zoology }	
Practical Anatomy . . . . .	
	10-12
	Afternoon

(*Examination in Botany and Zoology.*)

**Second Year.**

*Winter (1st Term)—*

Physiology . . . . .	10-11
Practical Physiology (twice weekly) . . . . .	11-1
Practical Anatomy.	

*Winter (2nd Term)—*

Physiology . . . . .	10-11
Practical Physiology . . . . .	11-1
Practical Anatomy and Demonstrations.	

*Summer Term—*Hour of Meeting  
of Class.  
8-10 or 11-1

Histology . . . . .	
Practical Materia Medica.	
Practical Anatomy and Demonstrations.	
<i>(Examination in Anatomy and Physiology.)</i>	

**Third Year.***Winter (1st Term)—*

Medicine . . . . .	9-10
Pathology (Morbid Anatomy) . . . . .	10-11
Clinical Medicine . . . . .	11-1
Materia Medica . . . . .	2-3
Pathology (including Elementary Bacteriology) . . . . .	3-4

*Winter (2nd Term)—*

Medicine . . . . .	9-10
Pathology (Morbid Anatomy) . . . . .	10-11
Clinical Medicine . . . . .	12-1.30
Materia Medica . . . . .	2-3
Pathology (including Elementary Bacteriology) . . . . .	3-4

*Summer Term—*

Pathology (Practical) (thrice weekly) . . . . .	8-10
Pathology (Morbid Anatomy) . . . . .	10-11
Clinical Surgery . . . . .	12-2
Practical Materia Medica (if not previously attended).	
Vaccination . . . . .	3-4

*(Examination in Pathology and Materia Medica.)***Fourth Year.***Winter (1st Term)—*

Surgery . . . . .	9-10
Midwifery (including Gynecology) . . . . .	10-11
Sec. A. Diseases of Skin . . . . .	} 11-12      Clinical Surgery .      12-2
„ B. Diseases of Eye . . . . .	
„ C. Diseases of Ear, etc. . . . .	
Dispensary Practice . . . . .	}      .      .      Afternoon
Infectious Diseases (once weekly) . . . . .	
Anæsthetics. . . . .	
Optional Classes. . . . .	

*Winter (2nd Term)—*

Surgery . . . . .	9-10
Midwifery (including Gynecology) . . . . .	10-11
Sec. A. Diseases of Ear, etc. . . . .	} 11-12      Clinical Surgery .      12-2
„ B. Diseases of Skin . . . . .	
„ C. Diseases of Eye . . . . .	
Mental Diseases (twice weekly) . . . . .	3-4
Infectious Diseases (if not previously attended) . . . . .	}      .      .      Afternoon
Dispensary Practice . . . . .	
Practical Midwifery . . . . .	

*Summer Term—*

Operative Surgery . . . . .	8-9.45
Public Health . . . . .	10-11
Sec. A. Diseases of Children . . . . .	11-1
„ B. Diseases of Ear, etc. . . . .	} 11-12      Clinical Medicine      12-1.30
„ C. Diseases of Skin . . . . .	
Forensic Medicine . . . . .	2-3
Infectious Diseases (if not previously attended) . . . . .	Afternoon

*(Examination in Forensic Medicine and Public Health.)*



## Fifth Year.

*Winter (1st Term)—*

	Hours of Meeting of Classes.
Clinical Gynecology . . . . .	10-11
Sec. B. Diseases of Children . . . . .	11-1
„ A. Diseases of Eye 11-12. (Clinical Medicine . . . . .	12-1.3)
„ C. Clinical Medicine or (Clinical Surgery. Dispensary Practice )	
Practical Midwifery ) . . . . .	Afternoon
Optional Classes.	

*Winter (2nd Term)—*

Clinical Gynecology . . . . .	10-11
Sec. C. Diseases of Children . . . . .	11-1
Secs. A. and B. Clinical Medicine or Clinical Surgery . . . . .	12
Dispensary Practice ) if not previously attended . . . . .	Afternoon
Practical Midwifery )	

*Summer Term—*

## Clinical Work in Hospital.

*(Examination in Midwifery, including Gynecology, Surgery, and Medicine,  
and corresponding Clinical Examinations.)*

The candidate must attend Hospital for not less than three years: must attend both Clinical Medicine and Clinical Surgery for a period of at least nine months; twenty cases of Midwifery, or twelve cases and three months' attendance at a Maternity Hospital; and Post-Mortem Examinations for three months.

It is required that, before commencing the study of Practical Midwifery, every student shall have held the offices of Clinical Medical Clerk and Surgical Dresser, and have attended a Course of Lectures on Surgery and Midwifery.

Two of the five years of study must be spent at the University, and not less than eight of the compulsory subjects of study must be taken in the University.

The minimum expense of M.B. and Ch.B., including fees for Classes, Hospital, Matriculation and Examination, amounts to about £143.

## DEGREE OF M.D.

Each candidate for this degree who began medical study after 1st October 1892 must be of the age of twenty-four years or upwards, and must have obtained the degrees of M.B. and Ch.B. of the University. He must either have been engaged for two years in general practice, or for one year in the naval or military medical services, or in the medical wards of a hospital, or in scientific research. He must present a thesis written by himself on a medical subject, and pass an examination in Clinical Medicine. In this examination the candidate has to write a report and commentary on at least three cases, and has to show a practical knowledge in the application of the ophthalmoscope, laryngoscope, electrical apparatus, and sphygmograph, in the examination of the blood, and in the chemical and microscopical examination of the excreta.

The candidate who has graduated M.B. and Ch.B. under the old regulations may either proceed to the degree of M.D. under the old regulations (under which he is not required to pass an examination in Clinical Medicine, but must have passed examinations in Greek and in Logic or Moral Philosophy), or he may proceed to the degree as if he had graduated M.B., Ch.B. under the New Regulations.

## DEGREE OF CH.M.

Each candidate must be not less than twenty-four years of age, must possess the degrees of M.B., Ch.B., must have attended the surgical wards of a hospital for one year, or have spent one year in scientific research or in the naval or military medical services, or two years in practice other than that restricted to medicine. He must submit a thesis on a surgical subject, and pass an examination on Clinical Surgery and its branches, Surgical Anatomy, and Operations on the Dead Body.

## FEES FOR M.D. AND CH.M.

The fee for the M.D. degree under the old regulations is five guineas; for the M.D. or Ch.M., under the New Regulations, ten guineas. The candidate must have paid the matriculation fee for the year in which he presents himself for examination or graduation. At each reappearance for examination, under the New Regulations, the fee is five guineas.

## DEGREES IN PUBLIC HEALTH.

Two degrees are granted by the University of Edinburgh in the department of Sanitary Science, viz. B.Sc. and D.Sc.

## BACHELOR OF SCIENCE.

Candidates must be graduates in Medicine of a University of the United Kingdom or of some other recognised University. In order to obtain the degree two examinations have to be passed.

*First Examination.*—Before entering for this examination the candidate must, after graduating in Medicine, have worked in a recognised Public Health Laboratory for eight months, of which five consecutive months must be passed in the Public Health Laboratory of the University of Edinburgh.

He must also have attended in a Scottish University a course of lectures on Physics and a course of lectures on Geology, extending over three months, and approved of by the University Court.

The subjects of examination are as follows:—

- (1) *Laboratory work*—Practical, written and oral; examination of water, air, foods, beverages, condiments, sewage; soils; disinfectants; building materials; clothing; bacteriology.
- (2) *Physics.* (3) *Geology.*

*Second Examination.*—This cannot be taken until eighteen months after graduating in medicine; nor sooner than six months after passing the First B.Sc. Examination. The candidate must have attended two separate courses on Public Health, either in the University of Edinburgh or in some other recognised University or School.

Each course must consist of forty lectures, and include Medicine in its relation to Public Health and Sanitary Engineering.

The candidate must likewise produce evidence (1) that for six months he has studied sanitary work under a Medical Officer of Health for a county or burgh of not less than 25,000 inhabitants; (2) that he has studied clinically for three months infectious diseases in a recognised institution; (3) that for three months he has been instructed by a recognised teacher in mensuration and drawing.

The subjects of examination are:—

- (1) Sanitation; (2) Sanitary Law; (3) Vital Statistics; (4) Medicine in Relation to Public Health.

The candidate is examined orally, practically, and by a written paper. *Sanitation* includes making reports on dwellings, workshops, hospitals and sanitary schemes.

The University Court may modify the work and instruction prescribed from time to time.

DOCTOR OF SCIENCE.

A graduate after having held the degree of B.Sc. for five years may present himself for the D.Sc. He must present a thesis or a published work or memoirs, the result of his own research, and must pass an examination in Public Health, and in such of its special subjects as the Senatus may determine. The candidate must submit the subject in which he proposes to be examined for approval not less than two months before the examination.

FEES PAYABLE.—First and second examinations, £3, 3s. each; for D.Sc., £10, 10s.

INSTITUTIONS FOR CLINICAL INSTRUCTION IN EDINBURGH.

Royal Infirmary. 921 beds and 42 cots. Fees—perpetual ticket, £12; one year, £6, 6s.; six months, £4, 4s.; three months, £2, 2s. Clinical instruction is given daily in Medicine, Surgery, and all their special branches.

Royal Hospital for Sick Children. 120 beds. Hospital ticket, £1, 1s. Fee for Qualifying Course, £2, 2s.

City Hospital for Infectious Diseases. 600 beds. Fee, £1, 1s.

Royal Maternity and Simpson Memorial Hospital. 40 beds. The Maternity Residency affords accommodation for twelve students.

Royal Asylum, Morningside. 500 beds.

The fee for a qualifying course at each of these last two institutions is £2, 2s.

Royal Victoria Hospital for Consumption and Diseases of the Chest. 50 beds. Out-Patient Department at Spittal Street.

Eye, Ear and Throat Infirmary. 6 beds; 2700 Out-Patients yearly. Fee for three months, £1, 1s.

Royal, New Town, Medical Missionary (Cowgate), Western, Provident (Marshall Street), Eye, and Skin Dispensaries.

PROFESSORS AND LECTURERS IN EDINBURGH.

The Courses given by the Extramural Lecturers are recognised by the University and other examining boards as qualifying for graduation.

*Botany*— Professor Bayley Balfour, M.D., Botanical Gardens.

*Zoology*— Professor J. Cossar Ewart, M.D., University.  
Malcolm Laurie, D.Sc., Surgeons' Hall.  
Hugh Miller, F.Z.S., 29 George Square.

*Biology*— Malcolm Laurie, D.Sc., Surgeons' Hall.  
C. R. Whittaker, F.R.C.S., New School.

*Physics*— Professor C. G. Barkla, D.Sc., University.  
C. G. Knott, D.Sc., University.  
Dawson Turner, M.D., Surgeons' Hall.  
A. McKendrick, F.R.C.S., New School.

*Chemistry*— Professor Walker, University.  
G. H. Gemmell, F.I.C., 4 Lindsay Place.  
T. W. Drinkwater, Ph.D., Surgeons' Hall.

*Anatomy*— Professor A. Robinson, M.D., University.  
J. Ryland Whitaker, M.B., Surgeons' Hall.

*Applied Anatomy*—  
H. J. Stiles, M.B., University.  
J. Ryland Whitaker, M.B., Surgeons' Hall.

# *Medical Education in Scotland*

*Physiology*— Professor Sir E. A. Schäfer, LL.D., University.  
Alexander Goodall, M.D., Surgeons' Hall.

*Materia Medica and Therapeutics*—

Professor Sir Thomas R. Fraser, M.D., University.  
William Craig, M.D., Surgeons' Hall.  
John Orr, M.D., New School.

*Pathology*— Professor Lorrain Smith, M.D., University.  
James Miller, M.D., Surgeons' Hall.

*Surgery*— Professor Alexis Thomson, C.M.G., University.  
A. A. Scot Skirving, C.M.G., F.R.C.S., 27 Nicolson Square.  
G. L. Chiene, F.R.C.S., New School.  
Henry Wade, F.R.C.S., Surgeons' Hall.  
J. W. Struthers, F.R.C.S., New School.  
W. J. Stuart, F.R.C.S., 59 Forrest Road.  
Lewis Beesly, F.R.C.S., Surgeons' Hall.

*Clinical Surgery*—

The Surgeons of the Royal Infirmary.  
Professor F. M. Caird.  
Professor Alexis Thomson.  
J. W. B. Hodsdon.  
David Wallace.  
Alexander Miles.  
John W. Dowden.  
A. A. Scot Skirving.  
And Assistant Surgeons.

*Practice of Medicine*—

Professor G. Lovell Gulland, M.D., University.  
Harry Rainy, M.D., 27 Nicolson Square.  
R. A. Fleming, M.D., Surgeons' Hall.  
A. Dingwall Fordyce, M.D., Dental Hospital.  
W. T. Ritchie, M.D., Surgeons' Hall.

*Clinical Medicine*—

The Physicians of the Royal Infirmary.  
Professor Sir Thomas R. Fraser.  
Professor G. Lovell Gulland.  
Professor Wm. Russell.  
Sir R. W. Philip.  
Dr. Graham Brown.  
Dr. F. D. Boyd.  
Dr. R. A. Fleming.  
Dr. Harry Rainy.  
And Assistant Physicians.

*Midwifery and Gynecology*—

Professor Sir J. Halliday Croom, M.D., University.  
D. Berry Hart, M.D., Surgeons' Hall.  
J. W. Ballantyne, M.D., Surgeons' Hall.  
A. H. F. Barbour, M.D., University and Royal Infirmary.  
J. Haig Ferguson, M.D., New School.  
N. T. Brewis, F.R.C.S., Royal Infirmary.  
G. F. B. Simpson, M.D., New School.  
E. M. Inglis, M.B.  
John McGibbon, M.B., 59 Forrest Road.  
H. S. Davidson, F.R.C.S., Nicolson Square.

*Insanity*—

G. M. Robertson, M.D., University and Royal Asylum.  
John Keay, M.D., Surgeons' Hall and Bangour Village Asylum.



*Diseases of the Eye—*

W. G. Sym, M.D., Royal Infirmary.  
J. V. Paterson, M.B., Royal Infirmary.  
A. H. H. Sinclair, M.D. (Ophthalmoscopy), 45 Lauriston Place.

*Vaccination—*W. G. Aitchison Robertson, M.D., D.Sc., Royal Dispensary.

W. D. D. Small, M.B., Provident Dispensary.

*Diseases of Children—*

John Thomson, M.D.  
H. J. Stiles, M.B.  
J. S. Fowler, M.D.  
J. W. Simpson, M.D.

*Diseases of the Skin—*

Norman Walker, M.D., Royal Infirmary.  
Frederick Gardiner, M.D., Surgeons' Hall.

*Diseases of the Ear, Nose, and Throat—*

A. Logan Turner, M.D., Royal Infirmary.  
J. Malcolm Farquharson, M.B., Royal Infirmary.  
J. S. Fraser, M.B., Surgeons' Hall.

*Forensic Medicine—*

Professor Harvey Littlejohn, F.R.C.S., University.  
W. G. Aitchison Robertson, M.D., D.Sc., Surgeons' Hall.

*Public Health—*

Professor C. Hunter Stewart, M.B., University.  
W. G. Aitchison Robertson, M.D., D.Sc., Surgeons' Hall.  
Wm. Robertson, M.D., Surgeons' Hall.

*Fevers—*

Alexander James, M.D., City Hospital.  
C. B. Ker, M.D., City Hospital.

*Bacteriology—*

Professor James Ritchie, M.D., University.  
J. Taylor Grant, M.D., 4 Lindsay Place.  
James Miller, M.D., Surgeons' Hall.

*Diseases of Tropical Climates—*

Major D. G. Marshall, I.M.S., University and Surgeons' Hall.

*Practical Medicine and Physical Diagnosis—*

Alexander Goodall, M.D., Surgeons' Hall.  
R. A. Fleming, M.D., Nicolson Square.  
J. D. Comrie, M.D., 59 Forrest Road.

*Neurology—* J. J. Graham Brown, M.D., University.

*Physical Methods in the Treatment of Disease—*

Harry Rainy, M.D., University.

*Diseases of the Chest—*

Sir R. W. Philip, M.D., Royal Victoria Hospital.

*Medical Electricity and Röntgen Rays—*

Dawson Turner, M.D., Surgeons' Hall.

*Practical Anaesthetics—*

J. Stuart Ross, M.B., University.

*History of Medicine—*

J. D. Comrie, M.D., University.

## UNIVERSITY OF GLASGOW.

## DEGREE OF M.B. AND CH.B.

Within recent years the facilities for both scientific and practical training have been much extended and improved. New and fully equipped laboratories have been added in connection with nearly all the scientific subjects, the most recent addition being a large building, completed at a cost of £40,000, for the departments of Physiology, Materia Medica, and Public Health. There is a large and well-equipped Pathological Institute at the Western Infirmary in which the University Classrooms are placed, and the Professor of Pathology is *ex officio* Pathologist to the Infirmary, and has control of all the pathological material for purposes of instruction and investigation. A corresponding arrangement forms part of the new scheme recently completed with regard to the Royal Infirmary. The Western Infirmary is close to the University, and has hitherto been the chief field of clinical instruction of University students. A scheme has, however, been carried through, according to which University Chairs, on the same footing as those already in existence, have been instituted at the Royal Infirmary in the subjects of Pathology, Medicine, Surgery, Midwifery, and Gynecology. Students accordingly have the option of taking the subjects of the two final years of study at the Royal Infirmary, and in this way the advantage is afforded of a very wide clinical field along with systematic instruction under University Professors. The great disadvantage of attending classes at Gilmorehill and going to the Royal Infirmary, at a considerable distance, for clinical work is thus done away with.

The latest development is the institution, at the Western Infirmary, of a Laboratory for Clinical Pathology, the Director of which is also a University Lecturer, and gives instruction to University students in the scientific methods of clinical diagnosis.

Under the New Ordinance of the University Court, which came into operation on 1st October 1911, the regulations for these Degrees (except in regard to the Preliminary Examination) have been considerably altered, the chief modifications being as follows:—1. A rearrangement of the subjects of the four Professional Examinations. 2. The rendering compulsory of some courses which hitherto have been optional. 3. The imposition of restrictions as to the period at which certain subjects of the curriculum can be taken.

The academical year is now divided into three terms of about ten teaching weeks each, and the following list gives the subjects of the several Professional Examinations, with the period of study required:—

## FIRST EXAMINATION.

Chemistry (including Organic Chemistry), 2 terms; with Practical Chemistry 1 term.

Physics (with practical work), 1 term.

Botany (with practical work), 1 term.

Zoology (with practical work), 1 term.

## SECOND EXAMINATION.

Anatomy and Practical Anatomy, 5 terms.

Physiology and Practical Physiology, 3 terms.

## THIRD EXAMINATION.

Materia Medica and Therapeutics, 2 terms.

Pathology and Practical Pathology, 3 terms.

## FOURTH EXAMINATION.

Medical Jurisprudence and Public Health, 2 terms.

Surgery, 2 terms.

Practice of Medicine, 2 terms.

Midwifery and Diseases Peculiar to Women and Infants, 2 terms.

The candidate must have attended the Medical and Surgical practice of a general hospital for three years, and courses of Clinical Surgery and Clinical Medicine of nine months in each case. He must also have received instruction, under conditions laid down, in the following subjects :—

Mental Diseases.

Practical Pharmacy.

Out-Patient Practice.

Clinical Clerking in Medicine.

Clinical Clerking or Dressing in Surgery.

Post-Mortem Examinations.

Infectious Diseases.

Gynecology.

Diseases of Children.

Ophthalmology.

Diseases of the Ear and Throat.

Dermatology.

Practical Midwifery with the Conduct of Cases of Labour.

Vaccination.

Administration of Anæsthetics.

Operative Surgery.

The following courses cannot be taken till after the end of the terms of the curriculum indicated in each case :—

Physiology and Practical Physiology—third term, and not (except Practical Histology) till at least three of the subjects of the First Examination have been passed.

Materia Medica and Therapeutics, and Pathology and Practical Pathology—sixth term.

Medical Jurisprudence and Public Health—after completion of classes for the Third Professional Examination.

Midwifery, etc., Surgery and Medicine—ninth term, with the exception that Surgery may be attended after the sixth term, provided that the candidate has passed the Second Professional Examination.

Hospital Practice, Clinical Medicine, Clinical Surgery—sixth term.

The curriculum extends over five years, two of which must be spent in the University of Glasgow. The remaining three years may be spent elsewhere, as indicated in the Ordinance and under the conditions thereby imposed.

Except in the case of Medicine, Surgery, and Midwifery, the Senate may accept the Professional Examinations of other Scottish Universities.

There are a number of other administrative regulations which need not here be specified in detail.

The examination fees are £23, 2s. in all, with an additional fee of £1, 1s. for every re-entry. The cost of the curriculum amounts roughly to £145, spread over the five years of the course, and at present the class fees are charged at so much a class. There is, however, a movement on foot to introduce a "composition" or "inclusive" fee per session, but the total will work out at practically the above figure.

## CLINICAL FACILITIES.

The following general hospitals, all of which are equipped in a modern fashion, are available for instruction of University students, viz. the Western Infirmary close to the University, the Royal Infirmary, to which the new

Medical Chairs are attached, each of these having at present about 600 beds, and the Victoria Infirmary, with 260 beds, on the south side of the city.

The Eye Infirmary at 174 Berkeley Street and 80 Charlotte Street (between them 100 beds), and the Ophthalmic Institution at 126 West Regent Street (35 beds), furnish ample opportunities for instruction in the important branch with which they deal; Insanity is equally well provided for at Gartnavel (460 beds), at Hawkhead (700 beds), at Gartloch (806 beds), and at Woodilee (1160 beds), while the City Fever Hospitals at Ruchill (540 beds) and Belvidere (680 beds) are available for the study of Zymotic Diseases. The Ear, the Throat and Nose, and the Skin are dealt with in the Western and Royal Infirmarys.

A new Maternity Hospital, with every modern convenience and equipment, was recently opened in Rottenrow, with accommodation for 104 patients, and a Hospital for Sick Children, of greatly increased dimensions, in freer air, has been erected at Yorkhill within a short distance of the University. The beds number 200.

The Ordinance is applicable alike to men and women students, and much of the instruction is given in "mixed" classes by the Professors. There are, however, exceptions to this, some classes for women alone being held in a separate building (Queen Margaret College), and some for both sexes (in the main buildings at Gilmorehill) at different hours. The Hospital work in the case of women has hitherto been taken entirely in the Royal Infirmary, there being no accommodation for them in the Western. This arrangement is likely to continue.

#### PROFESSORS.

*Zoology*— Professor Graham Kerr, M.A., F.R.S.

*Chemistry*— (Vacant).

*Practical Physics*—

Professor Gray, M.A., LL.D., F.R.S.

*Botany*— Professor Bower, Sc.D., F.R.S.

*Anatomy*— Professor Bryce, M.A., M.D.

*Physiology*— Professor Noël Paton, B.Sc., M.D., F.R.S.

*Materia Medica and Therapeutics*—

Professor Stockman, M.D.

*Pathology*— Professor Muir, M.A., M.D., F.R.S.

*Medical Jurisprudence*—

Professor Glaister, M.D., D.P.H.(Camb.).

*Surgery and Clinical Surgery*—

Professor Sir William Macewen, M.D., LL.D., D.Sc., F.R.S.

*Midwifery*— Professor Murdoch Cameron, M.D.

*Practice of Medicine and Clinical Medicine*—

Professor T. Kirkpatrick Monro, M.A., M.D.

*Public Health*—

Professor Glaister, M.D., D.P.H.(Camb.).

*Pathology*— Professor John H. Teacher, M.A., M.D.

*Medicine and Clinical Medicine*—

Professor Walter K. Hunter, D.Sc., M.D.

*Surgery and Clinical Surgery*—

Professor Robert Kennedy, M.A., D.Sc., M.D.

*Midwifery*—

Professor John M. Munro Kerr, M.D.



## LECTURERS.

*Organic Chemistry—*

T. S. Patterson, Ph.D., D.Sc.

*Physiological Chemistry—(Vacant).**Psychological Physiology—*

Henry J. Watt, M.A., Ph.D., D.Phil.

*Ear—*

A. A. Gray, M.D., and J. Kerr Love, M.D.

*Throat and Nose—*

James Walker Downie, M.B., and J. Macintyre, M.B.

*Skin—*

John Wyllie Nicol, M.B., and G. McIntyre, M.B.

*Clinical Pathology—*

John Shaw Dunn, M.A., M.D.

*Bacteriology—*

W. B. M. Martin, M.D.

*Pathological Histology—*

G. Haswell Wilson, M.B., Ch.B.

*Physics—*

James G. Gray, D.Sc.

*Insanity—*

Lancel R. Oswald, M.B., and J. H. Macdonald, M.B.

## DEAN.

Professor T. H. Bryce, M.A., M.D.

## DEGREE OF M.D.

This degree is open to holders of the M.B., Ch.B. diploma, after a period of one or two years, according to circumstances, has elapsed since the date of the latter. The requirements are (a) an Examination in Clinical Medicine, or in some approved department of Medical Science or Practice; (b) a Thesis on any branch of knowledge comprised in the examinations for M.B., Ch.B., excepting a subject which is exclusively surgical; and (c) a fee of £15, 15s., with an extra charge of £5, 5s. for each re-entry.

## DEGREE OF CH.M.

This may be obtained on practically the same terms as the M.D. degree, the only differences being (1) that the examination is on Surgical Anatomy, operations upon the dead body, on Clinical Surgery or an approved special department of Surgery, and (2) that the Thesis must not be on a subject which is exclusively medical.

## DEGREE OF B.Sc. IN PUBLIC HEALTH.

Candidates must be graduates in Medicine of a University in the United Kingdom or of some other University recognised for the purpose by the Glasgow University Court, and they must thereafter have received practical instruction, including instruction in Chemistry, Bacteriology, and the Pathology of the Diseases of Animals transmissible to man, for at least twenty hours per week during a minimum period of eight months, five consecutive months of which must be in the Public Health Laboratory of the University of Glasgow. Either before or after graduation in Medicine they must also have attended, in the University of Glasgow or elsewhere, courses of Physics and Geology, and after graduation two separate courses in Public Health (Medicine and Engineering), as well as practically studying sanitary work for six months

under a Medical Officer of Health in the United Kingdom, or a Sanitary Staff Officer of Health of the Royal Army Medical Corps, besides attending three months' practice of a Hospital for Infectious Diseases, where methods of administration can be studied, and three months in Mensuration and Drawing. The examinations are, *First*, Public Health, Laboratory Work, Physics, and Geology; *Second*, Sanitation, Sanitary Law, Vital Statistics, and Medicine in its bearings on Public Health. The examination fee is £6, 6s.

#### DEGREE OF D.Sc. IN PUBLIC HEALTH.

Five years after obtaining the B.Sc. degree, graduates may proceed to the higher Degree of D.Sc., the requirements being (*a*) a Thesis or a published memoir or work to be approved by the Senate; and (*b*) an examination in Public Health and in such of its special departments as the Senate and University Court may determine. The fee for this degree is £10, 10s.

#### QUEEN MARGARET COLLEGE FOR WOMEN.

A full course of Medicine and Surgery is obtainable partly at Queen Margaret College, but in recent years the tendency has been to have mixed classes at Gilmorehill. The regulations, fees, etc., are similar to those for men. The buildings are pleasantly situated in grounds of their own, close to the Botanic Gardens. The anatomical department is excellently arranged and most complete. Clinical work is amply provided for in the Royal Infirmary and its Dispensaries, and in the Royal Hospital for Sick Children, the Glasgow Maternity Hospital, the Royal Asylum of Gartnavel, and the Belvidere Fever Hospital. There are also arrangements for special study and research.

Students can have board and lodging at Queen Margaret Hall, within easy reach of the College, at the rate of about one guinea per week.

All information necessary can be obtained from Miss Melville, Queen Margaret College, Glasgow.

#### ST. MUNGO'S COLLEGE.

St. Mungo's College is contiguous to the Royal Infirmary, which is the largest hospital in Glasgow, and is situated in Cathedral Square, Castle Street. There is car communication with every part of the city.

The Infirmary has, including the Ophthalmic Department, over 835 beds, the average number occupied in 1916 being 767. There are special beds and wards for Diseases of Women, of the Throat, Nose and Ear, Skin, Venereal Diseases, Burns, and Septic Cases.

At the Outdoor Department the attendances in 1916 numbered over 137,000. In addition to the large Medical and Surgical Departments, there are Departments for Special Diseases—namely, Diseases of Women, of the Throat and Nose, of the Ear, of the Eye, of the Skin, and of the Teeth. A fully-equipped Electrical Pavilion was opened a few years ago, and year by year the latest and most approved apparatus for diagnosis and treatment has been added. Wards are set apart for the teaching of women students.

*Appointments.*—Five House-Physicians and twelve House-Surgeons, having a legal qualification in Medicine and Surgery, who board in the Hospital free of charge, are appointed every six months. Clerks and Dressers are appointed by the Physicians and Surgeons. As a large number of cases of acute diseases and accidents of a varied character are received, these appointments are very valuable and desirable.

*Fees.*—The fees for (*a*) hospital attendance, including attendance at the

Outdoor Department, at the Pathological Department, Post-Mortem Examinations, and the use of the Museum, and (b) Clinical Lectures, are as follows :—

(a) For Infirmary Attendance, Dispensary, etc.—

A. For Perpetual Ticket . . . . .	£7 0 0
B. For Season Tickets—	
Six months . . . . .	2 2 0
Three months . . . . .	1 1 0

Separate payments by a student for Season Tickets amounting in all to £7, 7s. shall, however, entitle a student to obtain from the superintendent a Perpetual Ticket in exchange therefor.

(b) For Clinical Instruction—

Two terms or six months . . . . .	£3 10 0
One term or three months . . . . .	1 15 0

(c) Students who have paid to any other hospital in the United Kingdom or elsewhere the fees necessary to obtain a Perpetual Ticket for such hospital shall be admitted as students of the Royal Infirmary on payment of a hospital entrance fee of £1, 1s. for attendance for six months, and 10s. 6d. for attendance for three months; and where a class for clinical instruction is taken, he shall pay in addition the fees for such instruction as above stated.

## THE ANDERSON COLLEGE OF MEDICINE,

DUMBARTON ROAD, PARTICK, GLASGOW.

The old Institution known as “Anderson’s University” was founded by the will of John Anderson, M.A., F.R.S., in 1795, and the medical school connected therewith dates back to the year 1799.

In 1877 the name of the Institution was altered from “Anderson’s University” to “Anderson’s College.” In 1887 the medical school of Anderson’s College became a distinct Institution known as “Anderson’s College Medical School.”

The new buildings are situated in Dumbarton Road, adjoining the Western Infirmary and the University. They are constructed on the best modern principles, and are provided with all the appliances requisite for the conduct and management of a fully-equipped medical school.

Classes are conducted in all the subjects of the five years’ curriculum :—

*Anatomy*—Vacant.

*Physics*—Professor Peter Bennett.

*Chemistry*—Professor J. Robertson Watson, M.A.

*Botany*—Professor B. G. Cornack, M.A., B.Sc.

*Zoology*—Professor W. Ferguson Mackenzie, M.B.

*Physiology*—Professor Hugh Morton, M.D.

*Materia Medica*—Professor J. P. Duncan, M.B., B.Sc.

*Medical Jurisprudence*—Professor Carstairs Douglas, D.Sc., M.D., F.R.S.E.

*Midwifery*—Professor W. D. Macfarlane, M.B., C.M.

*Surgery*—Professor Archibald Young, B.Sc., M.B.

*Practice of Medicine*—Professor John Cowan, B.A., D.Sc., M.D.

*Ophthalmic Medicine and Surgery*—Professor A. J. Ballantyne, M.D.

*Aural Surgery*—Professor James Galbraith Connal, M.D.

*Diseases of Throat and Nose*—Professor John Macintyre, M.B., F.R.S.E.

*Mental Diseases*—Ivy Mackenzie, M.A., B.Sc., M.D.

*Public Health Laboratory*—Professor Carstairs Douglas, D.Sc., M.D., F.R.S.E.

*Pathology*—At the Western or Royal Infirmary.

*Diseases of the Skin*—Professor J. Goodwin Tomkinson, M.D.

*Dental Anatomy and Physiology*—W. Wallace, M.A., M.D., L.D.S.

*Dental Surgery and Pathology*—John Watt, L.R.C.P., L.D.S.

*Dental Metallurgy*—Chas. Read, L.D.S.

*Dental Bacteriology*—Professor Carstairs Douglas, M.D., D.Sc., F.R.S.E.



*Degrees and Diplomas.*—Certificates of attendance on the classes at Anderson's College Medical School are received by the Universities of London and Durham, by the Royal University of Ireland, and by all the Royal Colleges and Licensing Boards in the United Kingdom. They are also recognised by the Universities of Glasgow and Edinburgh under certain conditions which are stated in the Calendar of this school. The Public Health Laboratory Course is recognised as qualifying for the Diploma granted by the Universities of Oxford, London, and Cambridge, the Scottish Conjoint Board, and the Royal Irish Colleges.

Candidates for the Licence in Dental Surgery can obtain at this School the full medical and dental curriculum which is required. The clinical work special to dentistry is conducted at the Glasgow Dental School, 15 Dalhousie Street.

Malcolm Kerr Bursary in Anatomy. Value about £10. Open to students of the junior anatomy class.

The Carnegie Trust will pay the fees of students at Anderson's, on conditions regarding which particulars may be obtained from Sir W. S. McCormick, LL.D., Carnegie Trust Offices, Edinburgh.

*Class Fees.*—For each course of lectures (anatomy, ophthalmic medicine and surgery, aural surgery, diseases of throat and nose, mental diseases, diseases of the skin, and dental classes excepted): first session, £2, 2s.; second session (in Anderson's College), £1, 1s.; afterwards free. Lectures on ophthalmic medicine and surgery, aural surgery, diseases of the throat and nose, mental diseases and diseases of the skin, each course, £1, 1s. For practical classes (except anatomy), viz. chemistry, botany, zoology, physiology, pharmacy, operative surgery: first session, £2, 2s.; second session, £2, 2s.

Reduced joint fees in zoology and in botany, for lectures and practical class when taken in same summer session, £3, 3s.; for either course separately, £2, 2s.

*Anatomy.*—Winter—first session, lectures and practical anatomy, £5, 5s.; practical anatomy alone, £2, 2s.; second session, lectures and practical anatomy, £4, 4s.; practical anatomy, £2, 2s.; for summer fees, see Calendar.

*Dental Classes.*—£3, 3s. each.

#### ABERDEEN UNIVERSITY.

The course of study for the degree of M.B., Ch.B. extends over five years of which two at least must be spent in the University of Aberdeen.

The curriculum is the same as in the other Scottish Universities as far as relates to attendance on University classes, to clinical study at a General Hospital, to attendance on courses of Clinical Surgery, Clinical Medicine, Mental Diseases, and Practical Pharmacy, Operative Surgery, Anæsthetics, to instruction in Vaccination, to attendance on Cases of Labour, and to the practice of a Dispensary.

The candidate must also, before admission to the final examination, produce the following certificates:—

1. That he has been present at not fewer than twenty-five post-mortem examinations, some of which he must have personally taken part in performing.

2. That he has attended a course of instruction in Infectious Diseases consisting of not fewer than ten meetings, in a Hospital for the treatment of such diseases containing at least a hundred beds.

3. That he has attended in a Hospital a course of instruction in Gynecology consisting of not fewer than twenty meetings.

4. That he has attended in a special hospital a course of instruction in the Diseases of Children, consisting of not fewer than twenty meetings.

5. That he has attended in the Ophthalmological Department of a Hospital or Dispensary a course of instruction in Ophthalmology, consisting of not fewer than thirty meetings extending over one term.

6. That he has attended in a Public Hospital or Dispensary a course of



instruction in Diseases of the Ear, Nose, and Throat, consisting of not fewer than twenty meetings.

7. That he has attended in a Public Hospital or Dispensary a course of instruction in Dermatology, consisting of not fewer than twenty meetings.

Certificates for these various classes and courses must attest not only regular attendance, but also due performance of the work.

There is no prescribed order of study, but a scheme, representing the minimum curriculum, has been drawn up for the guidance of students, and is printed in the Calendar.

#### THE FOLLOWING ARE THE CLASSES IN THE MEDICAL FACULTY:—

##### WINTER SESSION.

*Zoology*—Professor John Arthur Thomson, M.A., LL.D.  
*Chemistry (Syst. and Pract.)*—Professor Frederick Soddy, M.A., F.R.S.  
*Anatomy*—Professor Reid, M.D., F.R.C.S.  
*Practical Anatomy*—Professor Reid.  
*Physiology (Syst. and Pract.)*—Professor MacWilliam, M.D., F.R.S.  
*Materia Medica*—Professor Cash, M.D., LL.D., F.R.S.  
*Pathology (Syst. and Pract.)*—Professor Theodore Shennan, M.D., F.R.C.S.E.  
*Public Health*—Mr. John Parlange Kinloch, M.D., *Lecturer*.  
*Surgery*—Professor John Marnoch, C.V.O., M.A., M.B., C.M.  
*Medicine*—Professor Mackintosh, M.A., M.D.  
*Midwifery and Diseases of Women and Children*—Professor R. G. McKerron, M.A., M.D.

##### SUMMER SESSION.

*Botany*—Professor Trail, M.A., M.D., F.R.S.  
*Practical Botany*—Professor Trail.  
*Zoology*—Professor Thomson.  
*Practical Zoology*—Professor Thomson.  
*Physics*—Professor Niven, M.A., D.Sc., F.R.S.  
*Practical Anatomy*—Professor Reid.  
*Practical Materia Medica and Pharmacy*—Professor Cash.  
*Physiology (Syst. and Pract.)*—Professor MacWilliam.  
*Forensic Medicine*—Professor Hay, M.D., LL.D.  
*Practical Hygiene and Forensic Medicine*—Professor Hay.  
*Pathology (Syst. and Pract.)*—Professor Shennan.  
*Practical Midwifery and Gynecology and Clinical Diseases of Children*—Professor McKerron.

There are Assistants to all the Professors in the Medical Faculty, and also Lecturers in special departments—Chemistry (2), Embryology, Parasitology, Bio-Chemistry, etc.

Clinical Medicine and Clinical Surgery are taught by the Physicians and Surgeons of the Royal Infirmary.

The following are recognised as Lecturers:—

Lecturer on Mental Diseases . . .	Wm. Reid, M.D.
„ Ophthalmology . . .	{ C. H. Usher, M.B., B.S., F.R.C.S.
„ Vaccination . . .	{ A. Rudolph Galloway, M.A., M.B., C.M.
„ Skin Diseases . . .	T. Fraser, M.A., M.B., Ch.B.
„ Diseases of Ear, Throat, and Nose . . .	{ J. F. Christie, M.A., M.B., C.M.
„ Medical Electricity . . .	{ J. Mackenzie Booth, M.D., C.M.
„ Anæsthetics . . .	{ H. Peterkin, M.B.
	{ J. R. Levaack, M.B., C.M.
	{ Alex. Ogston, M.B., C.M.
	{ D. W. Geddie, M.B., C.M.

All the University Classes are held at Marischal College.

Tutorial Classes are held in connection with most of the Systematic

Courses, and practical instruction is given in the fully-equipped Laboratories connected with the several departments.

Graduates or others desirous of engaging in special study or research may be allowed by the Senatus to work in any of the Laboratories on payment of the usual matriculation fee.

General clinical instruction is obtained in the following Medical Institutions :—

*The Royal Infirmary of Aberdeen.*

This General Hospital, situated about seven minutes' walk from Marischal College, has been recently constructed on the most modern principles, and is fully equipped with all the requirements for medical work and teaching. It accommodates upwards of 270 patients : the number of patients admitted during the year 1914 was 3242, and the number of out-patients treated during the same period was 15,214.

Six resident medical officers are appointed annually, three in May and three in September, to hold office for twelve months. Salary, £26, 5s. with board.

*Fees.*—Perpetual fee to hospital practice, £10, or first year, £5, 10s., second year, £5, afterwards free ; clerkship in medicine, £1, 1s. ; dressership in surgery, £1, 1s. ; pathological demonstrations, £2, 2s. (Special courses of lectures are charged for.)

*The Royal Hospital for Sick Children.*

Is situated about five minutes' walk from Marischal College, and accommodates over 80 patients. The number of patients admitted in 1914 was 888, and the number of out-patients treated was 2057. Each student must act as clerk for six weeks in the medical and surgical wards respectively.

There are two resident medical officers, senior and junior, who hold office for six months. Salary at the rate of £25 per annum in the case of the senior resident, and £20 per annum in the case of the junior resident.

Fee for hospital practice, £2, 2s. first year.

*Note.*—The above Hospital is temporarily removed to Kepplestone House.

*The Royal Asylum.*

Is about fifteen minutes' walk from Marischal College. It accommodates over 950 patients, and has been recently fitted up with a fully-equipped hospital and a laboratory.

The senior physician is recognised by the University as lecturer on mental diseases, and delivers a qualifying course of lectures.

*The City (Fever) Hospital.*

Is about ten minutes' walk from Marischal College, and accommodates 250 patients.

Senior students are admitted for instruction in fevers twice a week under the visiting physician (who is the Medical Officer of Health for the City) and his assistant. Fee, £1, 1s.

*General Dispensary and Vaccine Institution.*

This is about five minutes' walk from Marischal College.

The total number of cases treated during 1914 was 6088, and the number of patients treated at their own homes 1085.

*Fees.*—General practice, £3, 3s. ; vaccination certificate and instruction, £1, 1s.

*Aberdeen Maternity Hospital.*

This Institution is situated at the top of Castle Terrace, less than ten minutes' walk from Marischal College. Contains 18 beds. The number of

patients treated in the hospital during 1914 was 203 and at their own homes 96—in all, 299. Fee, £3, 3s.

#### *Ophthalmic Institution.*

This Institution is situated about three minutes' walk from Marischa College. The surgeon in charge is recognised by the University as a lecturer on ophthalmology.

During 1914, 33 in-patients and 3080 out-patients were treated.

### PROFESSIONAL EXAMINATIONS.

There are four examinations: the subjects and regulations of these are common to the Universities of Aberdeen and Glasgow.

#### DEGREE OF M.D.

The regulations with regard to the age and other qualifications of the candidate are similar to those in the other Scottish Universities. He must submit a thesis written by himself upon any medical subject, and pass an examination in Clinical Medicine or in some Special Department of Medical Science or Practice.

#### DEGREE OF CH.M.

Each candidate must be not less than twenty-four years of age, and must hold the degree of M.B., Ch.B. of the University. He must produce a certificate of having been engaged for at least one year in attendance in the surgical wards of a hospital, or in scientific research, or in the naval and military services, or for two years in practice other than practice restricted to medicine. He must present a thesis on a surgical subject and pass an examination on Clinical Surgery, Surgical Anatomy, and Operations on the Dead Body.

#### DIPLOMA IN PUBLIC HEALTH (D.P.H.).

The diploma is conferred, after special instruction and examination, on any one who has been at least twelve months a graduate in medicine of a University in the United Kingdom; if not a graduate of Aberdeen University, the candidate must attend a course of instruction in this University in one or more subjects embraced in the examination for the diploma.

Each candidate must have attended a course of instruction in Public Health.

The qualifying post-graduate instruction embraces—

- (a) Regular attendance, for three months, at a hospital for infectious diseases, at which opportunities are afforded for the study of methods of administration.
- (b) Daily association for a period of six months (of which at least three months must be distinct from the period of laboratory instruction) in the duty, routine and special, of Public Health Administration, under the supervision of a recognised Medical Officer of Health.
- (c) Practical instruction, for at least six months, in laboratory work, which includes examination of water, air, soil and foods, and the study of bacteriology, disinfection, ventilation, water supply and sewerage, and the framing of reports of analysis. The laboratory attendance must extend over at least fifteen hours a week.

The qualifying courses of laboratory instruction in Aberdeen University are given in the Public Health Laboratory (fee, £6, 6s.), and the Bacteriological Laboratory (fee, £4, 4s.).

Instruction in Public Health Administration is given by Professor Hay, Medical Officer of Health of the City of Aberdeen (fee, £6).

Instruction is given in the Drawing and Interpretation of Plans (fee, £1, 1s.).

A short course of lectures is given on Statistical Methods and their application to Public Health.

The diploma is conferred after an examination in March and July of each year.

The examination is written, oral and practical, and is divided into two parts.

Part I. embraces the following subjects in their application to Public Health :—

(a) Physics, Engineering, and Meteorology.

(b) Chemistry, Microscopy, and Bacteriology.

Part II. embraces—

(a) General Hygiene.

(b) Sanitary Law and Vital Statistics

Part I. may be taken alone, or both parts together.

The written examinations occupy two days, and the oral and laboratory and outdoor examinations three to four days.

Candidates must send in their names and pay the fees a fortnight before the examination. Examination fee is five guineas. Re-examination fee one guinea.

#### FEES.

Arrangements have been made, in conjunction with the other Scottish Universities, for the institution of an inclusive fee for the courses of instruction leading to the M.B. and Ch.B. degrees. The inclusive fee for instruction within the walls of the University is ninety guineas, payable in five annual instalments.

The cost of matriculation, class and hospital fees for the whole curriculum, including the fees for the degrees, is usually about £160.

#### UNIVERSITY OF ST. ANDREWS.

The degrees conferred are Bachelor of Medicine and Bachelor of Surgery (M.B., Ch.B.), Doctor of Medicine (M.D.), and Master of Surgery (Ch.M.). The inclusive fee for the University instruction for M.B., Ch.B. is ninety guineas; and the inclusive fee for the clinical courses is forty guineas. These fees may be paid by annual instalments. For M.D. or Ch.M. the fee payable is fifteen guineas.

Two constituent colleges of the University provide medical teaching—the United College at St. Andrews and University College in Dundee. At St. Andrews classes for two years may be taken, and the student may pass the first and second professional examinations at St. Andrews. There are excellent opportunities for combining degrees in Arts and Science with those of Medicine. Inclusive fees have been arranged for students who wish to take advantage of these opportunities. There are many bursaries offered to students who desire to graduate in Medicine, and it should be added that the cost of rooms and of living in St. Andrews is considerably less than in the larger University cities. For women, both at St. Andrews and in Dundee, there are excellent residential halls provided, which are governed by the University authorities. The medical school is now carried on in buildings specially built for the purpose.

The Conjoint School of Medicine, Dundee, supplies a complete course of medical study, and the student from the United College, St. Andrews, completes his curriculum there. Large new buildings with well-equipped laboratories have been provided. Both in the Medical School and the wards of the Dundee Royal Infirmary the students have unrivalled opportunities for gaining a practical knowledge of medical science and of medical work, for they have individual attention and supervision which the larger schools cannot give.

The Dundee Royal Infirmary contains 400 beds, and includes special wards for obstetrics, gynecology, children's diseases, ophthalmology, dermatology, otology, incipient insanity, and electrical therapeutics. New out-patient departments are now in use. There is a large out-door maternity department.



Hospital Fees—Surgical and Medical, £3, 3s. yearly ; Perpetual Ticket, £10, or in instalments, £10, 10s. ; Obstetric Cases, £2, 2s. ; Obstetric Clinic, £1, 1s.

Westgreen Asylum at Liff provides abundant material for instruction in mental diseases, and the City Fever Hospital in fevers. The Dundee Eye Institution furnishes cases for instruction in ophthalmology.

The Diploma of Public Health (D.P.H.) may be taken at the Conjoint School of Medicine, Dundee.

A Diploma in Dental Surgery (L.D.S.) is also granted by the University. Instruction in the University, Royal Infirmary, and Dundee Dental Hospital. All classes in the University are open to men and women alike.

## UNITED COLLEGE, ST. ANDREWS.

### PROFESSORS AND LECTURERS.

- Physics*— Professor Butler, M.A.  
*Chemistry*— Professor Irvine, Ph.D., D.Sc.  
*Zoology*— Professor M'Intosh, M.D., LL.D., F.R.S.  
*Botany*— R. A. Robertson, M.A., B.Sc.  
*Physiology*—Professor Herring, M.D.  
*Anatomy*— Professor D. Waterston, M.D., F.R.C.S.

## UNIVERSITY COLLEGE, DUNDEE.

### PROFESSORS AND LECTURERS.

- Physics*— Professor Peddie, D.Sc.  
*Chemistry*— Professor Mackenzie, D.Sc., F.R.S.  
*Zoology*— Professor Thompson, M.A., D.Litt., F.R.S., C.B.  
*Botany*— Professor Geddes, F.R.S.E.  
*Physiology*—Professor Waymouth Reid, M.B., Sc.D., F.R.S.  
*Anatomy*— Principal Mackay, M.D., LL.D.  
           Lieut.-Col. Lamont, M.B., I.M.S. (retired).  
*Surgery*— Professor MacEwan, M.D., C.M.  
*Surgery, Clinical*—  
           D. M. Greig, C.M., F.R.C.S.  
           L. Turton Price, Ch.B., F.R.C.S.  
*Medicine*— Professor Stalker, M.D.  
*Medicine, Clinical*—  
           Professor Stalker, M.D. ; J. Mackie Whyte, M.D.  
*Materia Medica*—  
           Professor C. R. Marshall, M.D.  
*Pathology*— Professor Sutherland, M.B.  
*Midwifery and Gynecology*—  
           Professor Kynoch, M.B., F.R.C.P., F.R.C.S.  
*Midwifery and Gynecology, Clinical*—  
           Professor Kynoch, M.B., F.R.C.S.  
           R. C. Buist, M.D.  
*Forensic Medicine*—  
           C. Templeman, M.D., D.Sc., M.O.H.  
*Ophthalmology*—  
           Angus MacGillivray, M.D., D.Sc.  
*Diseases of Ear, Nose, and Throat*—  
           R. P. Mathers, M.D.  
*Diseases of Children*—  
           D. M. Greig, C.M., F.R.C.S.  
           J. S. Y. Rogers, M.B.

*Diseases of Skin—*

W. E. Foggie, M.D.

*Mental Diseases—*

W. Tuach Mackenzie, M.D.

*Vaccination—*

R. C. Buist, M.D.

*Fevers—* W. L. Burgess, M.D., D.P.H.*Clinical Pathology—*

F. M. Milne, M.B., D.P.H.

*Clinical Medical Tutor—*

Charles Kerr, M.B.

*Clinical Surgical Tutor—*

W. L. Robertson, Ch.B., F.R.C.S.

*Anæsthetics—*

A. Mills, M.D.

*Bacteriology—*

W. J. Tulloch, M.D.

*Dean of the Faculty of Medicine—*

Professor Kynoch.

## QUALIFICATIONS GIVEN BY THE SCOTTISH COLLEGES.

The Royal College of Physicians of Edinburgh, the Royal College of Surgeons of Edinburgh, and the Royal Faculty of Physicians and Surgeons of Glasgow, conjointly confer the Triple Qualification (L.R.C.P.E., L.R.C.S.E., L.R.F.P.S.G.). Female candidates are admitted to the examinations for this qualification.

**PRELIMINARY EXAMINATION.**—This examination must be passed before the student commences professional study. It may be passed before any of the Boards recognised by the General Medical Council, and enumerated in the Regulations of the Colleges. The Educational Institute of Scotland conducts a qualifying Preliminary examination for medical students, in Edinburgh and Glasgow, on behalf of the Colleges. This examination embraces English, Latin, Mathematics, and either Greek, French, German, Italian, or other modern language. All the subjects may be passed at one or not more than two times. Calendar, containing examination papers, can be had from Mr. Hugh Cameron, M.A., 34 North Bridge Street, Edinburgh. Price 1s.

**PROFESSIONAL EDUCATION.**—The curriculum must extend over five years. Graduates in Arts or Science of any recognised University who have spent a year in the study of Physics, Chemistry, and Biology, and have passed an examination in these subjects for the degrees in question, are exempted from the first year of study. The fifth year of study should be devoted to clinical work in one or more recognised Hospitals or Dispensaries, and to the study of special diseases. For information regarding the payment of class fees by the Carnegie Trust, *vide* p. i.

## ORDER OF STUDY WHICH IS RECOMMENDED.

*First Summer*— Physics and Elementary Biology.

*First Winter*— Five months' course in Chemistry and Anatomy; three months' course in Practical Chemistry; Practical Anatomy.

*Second Summer*— Practical Anatomy and Lectures; Practical Physiology.

*Second Winter*— Practical Anatomy; Physiology—Five months' course.

*Third Summer*— Three months' course in Practical Pathology, Materia Medica, and Practical Materia Medica; Surgical Hospital Practice.

## *Qualifications Given by the Scottish Colleges*    xxv

*Third Winter*— Six months' course in Surgery and Clinical Surgery; Attendance at Surgical Wards; Anesthetics; Pathology.

*Fourth Summer*— Three months' course in Midwifery, in Gynecology, in Medical Jurisprudence and Public Health, and in Clinical Surgery; Hospital Practice.

*Fourth Winter*— Six months' course in Medicine and Clinical Medicine; Hospital Practice.

*Fifth Summer*— Three months at Clinical Medicine; Hospital; Insanity; Diseases of Children; Diseases of Eye.

Practical Midwifery—Three months' attendance at a Lying-in Hospital, and conduction of Twelve Cases of Labour under official supervision.

*Fifth Winter*— Hospital Practice; Fevers; Dispensary; Vaccination; Skin Diseases; Ear and Throat Diseases; Eye Diseases; Venereal Diseases; Operative Surgery.

PROFESSIONAL EXAMINATIONS.—Four of these are held during the curriculum. Each is held quarterly in Edinburgh and twice a year in Glasgow. Candidates may enter for all or any of the subjects at the First, Second, and Third Examinations. In the Final Examination the subjects of Medicine, Surgery and Midwifery shall be taken together at the conclusion of five Winters and five Summers of Medical Study, provided that a period of twenty-four months has elapsed since passing the Second Professional Examination; and the subject of Medical Jurisprudence and Public Health may be taken at any time after passing the Third Examination. Candidates are advised to enter for the entire examinations.

*First Examination*— Physics, Chemistry and Elementary Biology. This should be passed before the beginning of the second winter session.

*Second Examination*— Anatomy, Physiology, and Practical Physiology. This should be passed at the end of the second year of study.

*Third Examination*— Pathology, Materia Medica and Pharmacy. This should be taken at the end of the third year.

*Final Examination*— Can only be taken at the end of the fifth year. The candidate must have attained the age of twenty-one. It includes—

1. Medicine, Therapeutics, Medical Anatomy, Clinical Medicine.
2. Surgery, Surgical Anatomy, Clinical Surgery, Diseases and Injuries of the Eye.
3. Midwifery and Diseases of Women.
4. Medical Jurisprudence and Public Health. This can be taken any time after the Third Examination.

### FEES FOR PROFESSIONAL EXAMINATIONS.

For each of the first three, £5; for the final, £15. The minimum total expense, inclusive of fees for classes and examinations, amounts to £115.

Fees for examinations *in Edinburgh* should be lodged with Mr. D. L. Eadie, 50 George Square, and *in Glasgow* with Mr. Walter Hurst, 242 St. Vincent Street.

### DIPLOMA IN PUBLIC HEALTH OF THE ROYAL COLLEGES.

The Diploma is granted by the Triple Qualification Board.

1. Every candidate for examination must hold a registrable medical qualification, which has been registered under the Medical Acts

2. After obtaining such qualification he must have attended a recognised Laboratory in which Chemistry, Bacteriology, and the Pathology of the Diseases of Animals Transmissible to Man are taught; and the certificate must show that the candidate has conducted Chemical and Bacteriological analyses of air, water, sewage and foods, and certify that the candidate has attended not less than four calendar months, and that he has worked in the Laboratory for at least 240 hours, of which not more than one-half shall be devoted to Practical Chemistry.

3. After obtaining a registrable qualification he must during six months (of which at least three months shall be distinct and separate from period of Laboratory instruction required) have been engaged in acquiring a practical knowledge of the duties of Public Health Administration for not less than sixty working days under the personal supervision of—

- (a) In England or Wales, the Medical Officer of Health of a County or single sanitary District having a population of not less than 50,000, or a Medical Officer of Health devoting his whole time to Public Health work; or
- (b) In Scotland or Ireland, the Medical Officer of Health of a County or District or Districts with a population of not less than 30,000; or
- (c) In Ireland, a Medical Superintendent Officer of Health of a District or Districts having a population of not less than 30,000; or
- (d) In the British Dominions outside the United Kingdom, a Medical Officer of Health of a Sanitary District having a population of not less than 30,000, who himself holds a Registrable Diploma in Public Health; or
- (e) A Medical Officer of Health who is also a Teacher in the Department of Public Health in a recognised Medical School.
- (f) A Sanitary Staff Officer of the Royal Army Medical Corps having charge of an Army Corps, District, Command, or Division recognised for the purpose by the General Medical Council.

4. After obtaining a medical qualification he must have attended for three months at least twice weekly the practice of a Hospital for Infectious Diseases, at which he has received instruction in the methods of administration.

The examination consists of two parts. The first part includes—(a) Laboratory work, with Chemistry and Bacteriology; (b) Physics and Meteorology.

The Second Examination embraces—(a) Report on premises visited; (b) Examination at Fever Hospital; (c) Examination at Public Abattoir; (d) Epidemiology and Endemiology; (e) Vital Statistics and Sanitary Law; (f) Practical Sanitation.

Each examination is held bi-annually, in October and May. The fee for each is £6, 6s.; for re-examination, £3, 3s. Fees and applications to be lodged with Mr. D. L. Eadie, 50 George Square, Edinburgh; or with Mr. Walter Hurst, 242 St. Vincent Street, Glasgow.

#### MEMBERSHIP AND FELLOWSHIP OF THE ROYAL COLLEGE OF PHYSICIANS, EDINBURGH.

Every applicant for the *Membership* must possess a recognised qualification, and be not less than twenty-four years of age. He must pass an examination on Medicine and Therapeutics, on Clinical Medicine, and on some Special Department of Medicine, such as Psychological Medicine, General Pathology and Morbid Anatomy, Medical Jurisprudence, Public Health, Midwifery, Diseases of Women, Diseases of Children, Tropical Medicine, etc. The Membership is conferred by election.

The fee for the Membership is thirty-five guineas, except the applicant be a Licentiate of the College, when it is twenty guineas.

Members of not less than three years' standing may be raised by election to the *Fellowship*, the fee being thirty-eight guineas, exclusive of Stamp Duty of £25.



FELLOWSHIP OF THE ROYAL COLLEGE OF SURGEONS, EDINBURGH.

Every candidate must be twenty-five years of age, and must have been engaged for two years in the practice of his profession, after having obtained a recognised qualification in Surgery. The petition for examination must be signed by two Fellows—a proposer and seconder.

The candidate must pass an examination on Principles and Practice of Surgery, including Surgical Anatomy, Clinical Surgery, and any one of the optional subjects; Ophthalmic Surgery, Aural, Nasal and Laryngeal Surgery, Dental Surgery, Surgical Pathology and Operative Surgery, Gynecology, Advanced Midwifery with Obstetric Surgery, Advanced Anatomy.

The fee is £45, except the candidate be a Licentiate of the College, when the fee is £35. Further particulars may be obtained from the Clerk to the College, 50 George Square, Edinburgh.

FELLOWSHIP OF THE ROYAL FACULTY OF PHYSICIANS AND SURGEONS  
OF GLASGOW.

Every candidate must have been qualified for two years, and be aged twenty-four. Admission to the Fellowship is by examination and subsequent election. The candidate is examined on either (*a*) Medicine (including Clinical Medicine, Medical Pathology, and Therapeutics), or (*b*) Surgery (including Clinical Surgery, Operative Surgery, Surgical Anatomy, and Surgical Pathology); and on one optional subject—Anatomy, Physiology, Pathology, Midwifery, Diseases of Women, Medical Jurisprudence, Ophthalmic Surgery, Aural, Laryngeal and Nasal Surgery, Dental Surgery, State Medicine, Psychological Medicine or Dermatology.

The fee is £30, except the candidate be a Licentiate of the Faculty, when it is £15.

The Fellowship Diploma is now open to Women.

POST-GRADUATION STUDY.

The different University Laboratories provide facilities for research work. In most cases no fees are charged, but those engaged in research work are expected to defray the expense of materials. The Laboratory of the Royal College of Physicians of Edinburgh is splendidly equipped for the carrying out of all branches of medical research. It is available for research work to Members and Fellows of the Royal Colleges of Edinburgh and to other applicants approved by the Council of the Royal College of Physicians. No fees are charged, and the ordinary reagents, etc., are provided. By arrangement with the Superintendent, workers may have the assistance of members of the Laboratory Staff. Special post-graduate courses may be arranged.

EDINBURGH POST-GRADUATE COURSES IN MEDICINE.

These courses, which are held during the Summer Vacation, are arranged by a Committee appointed by the University and School of the Royal Colleges. The programme for 1918 has not yet been drawn up, but will no doubt be somewhat similar to that for 1914, which was as follows:—

**JULY:**—A series of classes dealing with *Obstetrics and Gynaecology* (fee, Seven Guineas), and another series on *Diseases of Children* (fee, Five Guineas), were arranged for during the last fortnight of the month.

**AUGUST:**—A Four Weeks' Course on *Internal Medicine*. This included two clinics daily upon diseases of the various systems, in addition to classes upon Applied Anatomy, Hematology, Bacteriology and the Examination of the Heart, Urine, Digestive Products and Nervous System, X-Ray Diagnosis, and the Medical Aspects of Morbid Pregnancy. Between six and seven hours, instruction daily. Attendance limited to twenty-five. Fee, Ten Guineas.

SEPTEMBER :—A Four Weeks' *General Course*. Each fortnight was quite independent and might be taken separately. This included Medical and Surgical Clinics, Clinical Neurology, Dermatology, Fevers, Ophthalmology, Pediatrics, Infant Feeding, Applied Anatomy, Morbid Anatomy, Pathological Histology, etc. *Fee*, Five Guineas for the month or Three Guineas for either fortnight. A series of lectures upon subjects of general interest was given in connection with the course. These lectures were open to all practitioners.

A Four Weeks' *Surgical Course* included Surgical Clinics, Applied Anatomy, Surgical Pathology, Operative Surgery, etc. Attendance limited to thirty. *Fee*, Ten Guineas.

A Special Surgical Course during the second fortnight of September on the *Genito-Urinary Tract*. *Fee*, Six Guineas.

A Course on the *Ear, Nose, and Throat* (limited to ten) included classes on the pathology of this subject and operative work in addition to demonstrations on the methods of examination, clinics, etc. *Fee*, Ten Guineas.

A *Series of Classes*, the entries for which were limited, upon Hematology, Bacteriology, X-Rays, Gynecology, Gynecological Pathology, Ophthalmoscopy, Errors of Refraction, Ear, Nose and Throat, Histological Methods, etc. These classes were open only to those who had entered for the General, Surgical, or Ear, Nose and Throat courses, on payment of an Additional Guinea in each instance.

The various courses are attended by numbers of men which every year up to 1915 showed a steady increase. To ensure places for the limited courses it is necessary in some cases to enter at least three months before the beginning of the course desired.

In addition to these courses the classes throughout the year on Bacteriology, Diseases of the Blood, Diseases of the Tropics, Neurology, etc., are attended by a number of graduates.

Particulars of these classes are to be had from the Secretary The New University.

# EDINBURGH MEDICAL JOURNAL.

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## EDITORIAL NOTES.

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### Appointments.

SIR ROBERT W. PHILIP has been unanimously elected by the Edinburgh University Court to the Chair of Tuberculosis, which has just been created in the University. This is the first professorship of tuberculosis to be founded in the United Kingdom.

Dr. Norman Walker has been appointed Medical Commissioner in Scotland for the Ministry of National Service.

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## CASUALTIES.

DIED of wounds, Captain FREDERICK HARDIE, R.A.M.C. (T.F.), on 20th September.

Captain Hardie was educated at Edinburgh University, and, after graduating as M.B. and Ch.B. in 1900, went into practice at Southampton. He joined the 3rd Wessex Field Ambulance as lieutenant on 28th October 1914, and was promoted to captain six months later.

KILLED in action, Captain HENRY DEEDES NUTT MACKENZIE, R.A.M.C., on 4th October, aged 48.

Captain Mackenzie was educated at Bath College and at Edinburgh University, where he graduated M.B. and C.M. in 1893 and M.D. in 1897. He served as a civil surgeon in the South African War, receiving the medal. At the outbreak of the present war he offered his services to the Serbian Government, and was the first British doctor to serve in Serbia. He had since served in the Dardanelles, in Egypt, and in France, and when killed was attached to the Royal Field Artillery.

DIED on service, Lieutenant DAVID ANDERSON, R.A.M.C., in a French hospital, on 13th September, aged 31.

Lieutenant Anderson was educated at Glasgow University where he graduated M.B. and Ch.B. in 1908, afterwards going into practice at

Washington, County Durham. He had only recently taken a temporary commission in the R.A.M.C.

Nurse DAISY KATHLEEN MARK COLES, V.A.D., was killed by enemy aircraft on 30th September. She received her training at Leith Hospital, and had served in the Royal Victoria Hospital and at Craigleith Military Hospital before she went to France last June.

**ROYAL COLLEGE OF SURGEONS OF EDINBURGH.**—At the Annual Meeting of the College, held on 18th October, the following office-bearers were elected for the ensuing year:—*President*—Robert M'Kenzie Johnston; *Vice-President*—James W. B. Hodsdon; *Secretary and Treasurer*—George Mackay; *Convener of Museum Committee*—Charles Walker Cathcart; *Librarian*—Harold Jalland Stiles; *President's Council*—Francis Mitchell Caird, Sir George Andreas Berry, David Wallace, Henry Alexis Thomson, Harold Jalland Stiles, Alexander Miles. *Ex-officio*—the Vice-President, the Secretary and Treasurer, the Representative in the General Medical Council. *Representative in the General Medical Council*—James W. B. Hodsdon.

The following gentlemen having passed the requisite examinations were admitted Fellows:—Henry Howard Christie, M.B., Ch.B., M.D.(Glasg.), New Zealand; James Bertram Leather, M.R.C.S.(Eng.), L.R.C.P.(Lond.), Birmingham; Richard Parsons, M.D., C.M., Toronto; Marion Columbus Pruitt, M.D., L.R.C.S.(Edin.) (Triple), Atlanta; Henry Anthony Rippiner, M.B., Ch.B.(Edin.), Bradford, Yorks; David Welsh, L.R.C.S.(Edin.) (Triple), Northumberland.

#### Indian Medical Service.

It has been announced in the press that after the open competitive examination held in July 1915 for admission to the Indian Medical Service no similar examination would be held during the continuance of the war, but that such appointments as might be required to meet the absolutely indispensable needs of the Service would be made by nomination by the Secretary of State. To assist him in making these appointments, which, as already announced, will be limited in number to the absolutely indispensable needs of the Service, he has appointed a Selection Committee, who will summon and interview such applicants as may appear to be *prima facie* suitable, and make recommendations for appointment.

Applications for appointment should be addressed to the Secretary of the Military Department, India Office, Whitehall, S.W. 1, and should contain concise particulars of the applicant's medical degrees and career. Applicants must be over twenty-one and under thirty-two years of age at the time of application. Particulars regarding pay, promotion, etc., in the Service can be obtained from the Secretary, Military Department.



## LATHYRISM.

By RALPH STOCKMAN, M.D.,

Professor of Materia Medica and Therapeutics, University of Glasgow.

HIPPOCRATES records that the prolonged use of certain peas as food is liable to cause paralysis: "At Ainos, all, men and women, who ate continuously peas, became impotent in the legs, and that state persisted."<sup>20</sup> It is impossible to identify the particular pulse in question, but since Hippocratic times a large amount of experience has accumulated regarding the poisonous effects in man and animals of the peas of several species of *Lathyrus* (vetchlings), especially when taken as a considerable part of the daily dietary. The seeds of *Errum Errilia* (the bitter vetch) are also known to be poisonous (Southall,<sup>36</sup> Bourlier<sup>5</sup>), and some other leguminous seeds used as food seem to be at least under suspicion (Kinloch Kirk,<sup>24</sup> M'Dougall<sup>28</sup>). Nearly all later writers refer the specific deleterious effects to the peas of three species of *Lathyrus* which are largely used as food for man and the domestic animals. The first definite mention of these by name as being poisonous is contained, according to Don,<sup>14</sup> in an edict of the Duke of Würtemberg (1671) forbidding the use of the flour to make bread, owing to its causing an incurable form of paralysis of the lower limbs. I have been unable to discover the source of Don's information, but he also states, on the authority of Duvernoy Fabbroni of Florence, that the Government there had cautioned the peasants in 1786 regarding the danger of *Lathyrus sativus*, while in 1820 and 1822 the veterinary school at Alfort (Paris) warned farmers against the use of *L. Cicera* for feeding horses, on the ground that it caused them to become roarers and to die if worked. The main facts were probably, therefore, common knowledge in the countries affected, although written records are for long so scanty. It is not till the nineteenth century that accounts of outbreaks of disease in man and the domestic animals, due to their being fed on the peas of certain species of *Lathyrus*, begin to appear with any frequency. These outbreaks have occurred chiefly in Italy, France, Algeria, and India. In 1691 Ramazzini<sup>32</sup> reported an epidemic in the Grand Duchy of Modena, and says that, like the one referred to by Hippocrates, it arose from feeding on pulse, especially *Errum*. He calls the condition *crurum exsolutio*. In 1819 Vilmorin<sup>38</sup> saw cases at Bourgeil (Indre et Loire), and in

1829 Desparanches<sup>13</sup> described an epidemic in the department of Loire et Cher. From 1860 cases had been reported by French military surgeons in Algeria, and in 1882 Proust<sup>31</sup> investigated officially a large epidemic there. In India the first account of it is given by Sleeman,<sup>34</sup> who records an epidemic which occurred in the Saugor district of the Central Provinces in 1833-34, and, later, Irving<sup>23</sup> contributed a series of valuable papers on outbreaks in the North-West Provinces. It is unnecessary for me to review the literature in detail, as this has been already done fully and accurately up to 1887 by Schuchardt,<sup>33</sup> in an easily accessible journal. Since then, however, a very important and comprehensive contribution to the subject has been made by Lieut.-Col. Andrew Buchanan,<sup>7</sup> Indian Medical Service, in the form of an official report on an outbreak of lathyrism in the Central Provinces in 1896-1902. In it he reviews all aspects of the question—historical, social, economic, agricultural, clinical, and experimental—in a very complete and able manner. It is unfortunate that this report has remained so little known and is so difficult to procure, as it is a mine of first-hand information on the subject. The name lathyrism was first used by Cantani<sup>9</sup> (Naples) in 1873 in describing three cases of the disease in man. The disease, however, was well known to the older Italian physicians under the names *crurum exsolutio*, *crurum impotentia*, *crura imbecillia*, and *storpio delle gambe*. Proust (1883) gave it the name "*Lathyrisme médullaire spasmodique*," by which it is usually described in French medical literature. The largest known epidemics are those described by Sleeman in the Saugor district of the Central Provinces (India), by A. Buchanan in the same district, when about 7600 persons were affected, by Irving in the North-West Provinces of India (about 4000 cases, and in some districts as many as 6 per cent. of the population), and by Proust and others in a district of Algeria, when there were 1000 to 1200 cases out of a Kabyle population of 18,000. Besides these, many isolated outbreaks on a smaller scale have been described, and the clinical symptoms carefully recorded by different writers.

Three species of *Lathyrus* cause epidemic and endemic poisoning in man and animals—(1) *L. sativus*—cultivated lathyrus or chickling vetch\*—was originally indigenous from the Caspian Sea to the North of India, and spread thence to Southern Europe,

\* The original English word was chichling, but it became chickling in the eighteenth century (Murray's *Dictionary*). It is from the French *chiche*, scanty, hence "dwarf."

where it has long been cultivated, as well as in India. In India the peas are of two sizes, the larger of which are grown on dry wheat lands, when they are called *lakh*, and the smaller on wet rice lands, when they are known as *lakhori*. There is said to be no botanical difference, but the latter is reputed locally to be harmless, while the former is considered dangerous. The peas are eaten and the plant is used as fodder in several countries. (2) *L. Cicera*—cicer-like\* or flat-podded lathyrus, or dwarf chickling-vetch—is grown chiefly in France, Italy, and Algeria. (3) *L. Clymenum*—Spanish vetch—is grown chiefly in Algeria, the Levant, North Africa, and Spain.

Riga pea or "dog-tooth" pea is the seed of a variety of *L. sativus* cultivated in Russia. The peas are two or three times as large as those grown in India, are wedge-shaped, white and shiny, with a distinct resemblance to dog's teeth. Vilmorin (*Plantes potagères*, p. 283) gives it the name *dent-de-brebis*, or "sheep's tooth." The Indian pea, besides being smaller, is greyish or brownish in colour. The Riga pea has the same poisonous action on horses (Slidders,<sup>35</sup> Abson<sup>1</sup>) as the others.

The correct Hindustani name for the peas of *L. sativus* is khasari (kessaree), but they are also known in Bengal as teora, and in Sind, the Punjab, and North-West Provinces as mattar. There are many other vernacular names (Watt,<sup>39</sup> Church,<sup>12</sup> A. Buchanan<sup>7</sup>). The Calcutta trade name is khasari, but in the Calcutta market the grains of the garden pea (*Pisum sativum*) and of the field pea (*P. arvense*) are known as mutter (muttur, mattar), while in Bombay and Kurrachee, from which ports the lathyrus peas are shipped to Europe, this word is used in a general sense for peas of different sorts. In consequence the term "mutter" has been adopted in Great Britain as the trade name for the lathyrus peas, while the seeds of *P. sativum* and *P. arvense* are known as "Indian peas." These generally contain from 20 to 30 or even 40 per cent. mutters (E. M. Holmes<sup>21</sup>). In India khasari is used chiefly in three ways for food—as flour in bread, as porridge, and as a dal (a general term for all kinds of split peas), the peas being cooked with oil or boiled in water. The *L. Cicera* is grown chiefly as fodder for cattle in Europe, but in times of dear wheat the peasants use the flour of the seeds to make bread. In France it is known as *gesse* or

\* The chick-pea (*Cicer arietinum*), a dwarf species of pea, the seeds of which are largely used in Southern Europe, Asia, and North Africa for food, is not poisonous. The French call them *pois chiches*.



*jarosse*, and in Italy as *cicerchia*. Most French writers state that the Kabyles in North Africa use the peameal of the *L. Cicera* and *L. Clymenum*, either in the form of thin cakes, with one-third to two-thirds of wheat or barley flour, or as a stew (known as *couscoussou*) with small pieces of meat. They also steep the whole peas in salt water and boil them in a pan. *Djilben* is the Arab name for the *L. Cicera* peas, and *Djilben el-Hanech* for those of *L. Clymenum*. Blaise,<sup>3</sup> however, states definitely that the Kabyles use chiefly the peas of a variety of *L. sativus*.

The composition of lathyrus peas as regards protein, fat, and carbohydrate content does not differ materially from that of other peas (Hughes,<sup>22</sup> Church). They are much cheaper, however, as they grow on poor soil and with little or no cultivation. Hence they come to be largely used by the poor in times of famine, and it has always been in such times that epidemics of lathyrism have occurred.

#### ACTION ON ANIMALS.

The whole plant is largely used as fodder, and, as a rule, no harm results. The addition of 20 per cent. of the peas to feeding-stuffs is well known to be innocuous except to horses. Laboratory feeding experiments have usually been negative, but every now and again cases of paralysis and death occur in the feeding of stock by farmers, which seems to point to the peas being sometimes specially poisonous.

*Pigs, Dogs, Rabbits.*—The grain is known to fatten pigs well, but Don, Chevallier, Lunier, and Blaise all agree that it is apt to bring on paralysis of the hind legs, or at least weakness and tremors. Brunelli<sup>18</sup> says that pigs which eat fresh plants of *L. Cicera* gradually lose power in their hind legs, and refers to certain cases which he knew of in the Abruzzi. He adds that the grain is hurtful to rabbits and dogs, but Desbauts states that Cottureau and Caignon fed dogs, rabbits, and hens on it without any positive result, and so did Blaise. Irving states that he fed pigs on the grain exclusively for nine months, that there was no poisoning, and that the flesh was good to eat. Bourlier relates that in Algiers 300 pigs were put in a field of *L. Cicera* to feed, and that many of them died during the night.

*Sheep, Oxen, Buffaloes.*—Here, also, feeding experience is somewhat conflicting. Lunier,<sup>26</sup> Buchanan,<sup>7</sup> Irving<sup>23</sup> agree that the grain alone or the whole green plant are excellent feeding and harmless. Irving says that he fed sheep on the grain exclusively



for nine months, and that Mr. Halsey (Benares) fed his cows on it alone for eighteen months, without injury. But Sleeman states that bullocks fed on teora are liable to lose the use of their limbs, Hendley,<sup>19</sup> that in the Central Provinces veterinary surgeons know it to be poisonous to cattle, and Voelcker,<sup>37</sup> that in his own knowledge cattle and sheep died from it when used as feeding cake, the most conspicuous symptom in cows being paralysis. Chevallier<sup>11</sup> says that sheep fed on it become very fat, but walk with tremors and are weak in the legs. Wide agricultural experience has shown that sheep and cattle are certainly not very susceptible to its action, and that a certain amount of it in their food is not dangerous. McCall gave 3 lbs. daily to bullocks and 1 lb. to sheep, and the animals fattened and remained well.

*Horses, Elephants.*—The records regarding poisoning in horses are of special interest, and the outbreaks have several times been on a large scale. The horse seems to be specially susceptible, while the symptoms, when fully developed, are definite and constant. They consist in weakness of the lumbar muscles ("gone in the loins"), roaring from implication of the recurrent laryngeal nerves, and on exertion dyspnoea or death from suffocation. Sometimes the paresis of muscles is more general, and the heart beats may be quick and weak. When at rest the animal seems perfectly well, and the attacks come on suddenly (mostly on exertion) and subside equally suddenly. Some cases show merely weakness and tremors in the legs, or rigidity; and Slidders states that ponies and horses stumbled about and staggered at work without any other symptom, and that two of these animals could be sent staggering by a push. As in man, the symptoms appear only after prolonged feeding. In the outbreak among horses of the Rouen Omnibus Company described by Bouley, 45 horses received daily 1 to 2 litres of the peas of *L. Cicera* mixed with 13 litres oats for one hundred and five days. On the 87th day the first horse became ill and 28 others rapidly followed. Delafond records that 25 horses were fed daily on 8 kgrms. of the whole plant (*L. Cicera*) for sixty-one days, and that they thrived and fattened, but at the end of that time and shortly after several of them were deeply affected. In 1894 the Bristol Tramway Company had 127 horses poisoned out of 800.<sup>30</sup> Leather<sup>25</sup> described an outbreak at Liverpool. The stock consisted of 74 cart horses and 6 ponies, and they got 3 to 4 lbs. per day each of Indian mutters with hay, maize, and oats. None of the ponies were affected, 35 of the horses were severely poisoned, and of these 19 died. The last case occurred eight weeks after

the mutters feeding was stopped. There are records also of exact experiments on horses. Abson fed a horse on an exclusive diet of 8 to 10 lbs. Riga peas daily for one month, when the characteristic symptoms appeared, and he states that  $3\frac{1}{2}$  lbs. daily with other food developed the symptoms in a number of horses after ninety days. McCall<sup>27</sup> records three feeding experiments: (1) A horse got 10 to 12 lbs. raw peas daily as its sole food, and in ten days the typical symptoms showed on exertion. (2) Another horse fed on raw peas for several weeks remained practically well. (3) A horse received 15 lbs. food daily, chiefly lathyrus peas. Distinct symptoms of paralysis appeared on the 32nd day and very severely by the 50th day.

Leather describes the post-mortem appearances with considerable care. The intrinsic muscles of the larynx (except the cricothyroid) were atrophied and degenerated fattily; the recurrent laryngeal nerves showed marked atrophy of the nerve fibres and an increase of the connective tissue. The motor cells in the vagal and accessory nuclei of the medulla oblongata were much atrophied. The multipolar ganglion cells in the inferior (anterior) cornua of the grey matter of the spinal cord were very much degenerated, and the neuroglia was increased. Many of the fibres of the inferior (anterior) nerve roots were atrophied. The longitudinal fibres of the cord were unaltered. In one case the early changes of sclerosis were visible in the superior part of the lateral columns. In all, the walls of the arterioles and capillaries of the cord showed thickening. McCall also notes marked atrophy of the multipolar nerve cells of the grey matter of the spinal cord, with increase of the neuroglia, thickening of the coats of the small arteries running in the grey matter, and degeneration of the laryngeal muscles. Elephants are said to be affected like horses.

*Monkeys.*—In Buchanan's report it is stated that two monkeys fed on the peas of *L. sativus* for several weeks remained in good health.

*Birds.*—Lunier<sup>26</sup> and Proust<sup>31</sup> state that fowls, pigeons, and partridges eat the peas freely and with impunity, but that ducks are readily poisoned. Bouley<sup>4</sup> prints a letter from Dr. Gabory,<sup>16</sup> who fed various birds on the peas of *L. Cicera* alone or with maize. Eighteen ducks from the first day showed signs of intoxication, they later developed paralysis of the legs, and finally died. Five peacocks died acutely of paralysis. He says that geese die readily when fed on the peas, and that pigeons are refractory. Hendley<sup>19</sup> also failed to poison pigeons by feeding. Hens have been fed on

the grain and remained well, but Blaise states that poisoning does occur sometimes.

*Man.*—As I intend to discuss the action on man at greater length in a separate paper (p. 297) I need here only give a short summary of the symptoms. These vary greatly according to the amount eaten and the length of time the person is subjected to its action. The slighter cases merely show a certain degree of motor paralysis in the legs, which is quickly recovered from. In more severe cases the paralysis is permanent, and may involve the nerves of the bladder, rectum, and genital organs. Walking is difficult and laborious, the person dragging his legs and feet with a peculiar gait, or he may be unable to walk. The patellar and ankle tendon reflexes are increased. Sometimes sensory disturbances are present. The symptoms generally supervene suddenly, or may be preceded by pain, prickling, numbness, and cramps. The arms are very rarely involved. The general health remains good, and the paralysis does not directly shorten life. No proper autopsies have ever been made, and hence the pathological anatomy is unknown.

As very large numbers of mankind habitually eat lathyrus peas, it is certain that when they are taken as part of a mixed dietary no poisonous symptoms occur. But in times of famine and poverty an excess is very apt to bring on all the symptoms of lathyrism in every degree of severity. Men are affected to a strikingly greater extent than women, and sometimes in families and communities only certain of the males suffer. Grandjean<sup>13</sup> says that when the peas form the sole diet (Algeria) the disease appears in six to eight weeks, and Cantani,<sup>9</sup> that in one of his cases it appeared after eating for one month bread made from the flour. The Kabyles think that one part to five of other flour in bread-making is harmless, Vilmorin says that one-third is dangerous with certainty, and A. Buchanan that one-half is safe. Desparanches<sup>13</sup> states that one-quarter is safe, but that one-half caused many cases of disease. Buchanan notes that in certain Indian jails 4 to 6 ozs. daily per person was given for years without any bad results being observed. But most observers agree that when the proportion in bread reaches one-half, or even one-third, many cases of lathyrism develop in two or three months' time.

It is evident that the results must depend largely on the toxicity of the grain used, on individual susceptibility, and on the amount eaten.

#### EXPERIMENTS.

My own observations were carried out by feeding experiments



on monkeys, rabbits, pigs, sheep, pigeons, and ducks. A certain number of experiments were also made with an impure and pure alkaloid obtained from the seeds.

*Monkeys.*—In carrying out these experiments nine different lots of the peas of *Lathyrus sativus* were used, all grown in India. Lot 1 was obtained from the Board of Agriculture, Lots 7 and 8 from the Indian Government (they were the larger variety—lakh—grown on wheat lands in the Central Provinces, and locally reputed to be poisonous), the others were bought as “mutter” from grain merchants, and were all of the small variety. All were perfectly fresh and sound, and when sown outside yielded a good crop of *L. sativus*. Two of them were carefully freed from dried earth and débris, and were found to contain about 12 per cent. by weight and 15 per cent. by number of other leguminous seeds of a harmless kind. As these are round and the lathyrus seed is wedge-shaped, it was not difficult to separate them by rolling off the former on a board, and hence for the experiments it was always possible to use the unmixed peas. As the experiments progressed it became abundantly evident that the nine samples of peas differed greatly in toxicity. Lot 1, of which I had unfortunately a comparatively small quantity, was much more poisonous than the others, then came Lots 8, 2, and 4, then Lots 5, 6, 9, and, lastly, Lots 3 and 7, which were very feebly toxic. The raw peas cannot be fed to monkeys except in very limited amount, as they cause diarrhœa. They require to be cooked, and the method of cooking has a very considerable bearing on their toxicity. At first the peas were steeped in cold water for a day and then boiled, the water being poured off. It is evident that this method is calculated to extract and lose part of any chemical poison which may be present, and from the water I have been able to separate a small quantity of alkaloid. Later, therefore, the peas were steeped in a minimum quantity of cold water and cooked by steam. Prepared in this way they were distinctly more potent. The monkeys ate them with relish, in quantity of about 100 to 200 grams per day, and never seemed to tire of them. The only additional food given was fresh raw fruit and vegetables. It is probable that many samples of lathyrus peas are more poisonous than any which I used for these experiments, but there is no method of determining their toxicity, and I had to take them as they came.

*Experiment I.*—A bonnet monkey (*Macacus sinicus*) was fed exclusively on peas of *Lathyrus sativus* (Lot 1) cooked in boiling water, and was supplied with more than it was able to eat. It remained to all





FIG. 1.



FIG. 2.



appearance perfectly well till nineteen days later, when the left arm was seen to be flexed at the elbow, wrist, and finger joints, to be stiff, and the animal unable to use it. The right arm was also flexed at the wrist. It walked about and ate well, but had lost its nimbleness to a great extent. By 5 p.m. the contracted condition had largely passed off, and two days later the animal was apparently normal again. It remained so till the 46th day of the experiment, when it was noticed to be again less active, and next day it was very paretic, lay on its side unable to stand, and the hands flexed exactly as in drop-wrist. It could grasp with its hands and feet, and was able to climb feebly. There was evidently paresis or paralysis of the extensor muscles of the limbs, while the flexors retained their power. There was no increase of reflexes. It recovered during the afternoon, but remained paretic and not very active, and three days later, at 10.30 A.M., it suddenly became quite rigid in its arms and legs, all the joints of which were flexed by a strong contraction of the flexor muscles, while the adductor muscles of the thighs were also strongly contracted. No knee-jerk, no plantar reflex, and no ankle-clonus could be elicited (probably on account of the muscular contraction). It lay on its side, incapable of spontaneous movement. Its respiratory muscles were affected and cyanosis was very distinct. By 11.30 A.M. the attack was passing off. The digits were then tightly flexed and curled in on the palms and soles (Fig. 1), so that it walked by supporting itself on the knuckles of the fingers and toes. It dragged the left leg very much, and there was very evident general muscular paresis. It ate the peas freely during this time. Next day the flexion of fingers and toes was still present, with some general muscular paresis, and a day later the animal had quite recovered, except for some slight feebleness in its muscles and a slight degree of tremor when they were used. It had got much thinner, although it ate well all the time. On the 60th day of the experiment it developed a similar but more severe attack. The joints of the limbs were all more or less bent by muscular contractions, the tail was stiff, and there were constant tremors of the masseters. It was very pale, and lay on its side unable to sit up, with an occasional clonus of its limbs, and its muscles rigid (Fig. 2). The respiration gradually failed, it became unconscious, and died in about eight hours. The heart was beating feebly after death. On post-mortem examination the viscera were all found to be healthy. The brain, spinal cord, and peripheral nerves were hardened in Müller's fluid, and carefully examined microscopically, but no pathological changes were discoverable.

*Experiment II.*—A bonnet monkey was fed on the same peas (Lot 1) for three days. It had no symptoms which were seen, but was found dead on the morning of the fourth day. The post-mortem examination was negative. I have assumed that this monkey died of acute lathyrus poisoning, as there was no other apparent cause.

*Experiment III.*—A bonnet monkey (3060 grams in weight) was fed exclusively on boiled peas of *Lathyrus sativus* (Lot 2). It ate them very freely, but gradually got thinner and not so active (slight paresis). On the 56th day of the experiment it was found lying on its side, with slight bending of the joints of its arms and legs. It continued to eat the peas freely, and next day the forearms, hands and fingers, thighs, legs, and toes were all very much flexed, but there was no muscular spasm. It was more like paresis of the extensor muscles, the flexors being unopposed. The patellar reflex was present. The respiration was very shallow. It died gradually from respiratory failure. The post-mortem examination was negative. The weight had decreased to 1880 grams.

*Experiment IV.*—A Rhesus monkey (*Macacus rhesus*) was fed on boiled peas of *Lathyrus sativus* (Lot 2) exclusively. It ate about 100 to 150 grams daily. It showed no symptoms of poisoning, and at the end of 107 days it was fat and in good condition, healthy, and apparently normal in every way. The experiment was then stopped, and the animal remained well.

*Experiment V.*—A small monkey (*Macacus*), the exact species of which I was unable to determine, was fed on lathyrus peas (Lot 2), getting 75 grams boiled and 25 grams raw daily. It seldom ate its allowance, as it had a small appetite compared with the other monkeys. For 186 days it remained perfectly well. It was then put on the same peas cooked by steaming them, and five days later developed a slight but quite noticeable paresis in the extensor muscles of the right arm and leg. Later, both legs were sometimes paretic and sometimes not, varying from day to day. On the 241st day peas from Lot 3 were substituted, and the paretic attacks practically disappeared. On the 300th day it was fed on peas from Lot 4, and from this time to the 329th day the paresis of the legs became again observable and more marked. It was then fed for a month on bread and milk, but the paresis did not wholly disappear, although it lessened. On resuming feeding with lathyrus (359th day) the legs again became paretic, but it could run about, and was fairly active. On the 390th day the lathyrus feeding was stopped, and it was given ordinary mixed food. It had remained in excellent general health all the time. On the 402nd day the paresis previously present had lessened, but its feet were held constantly inverted, and its hamstring muscles were tense and shortened, which gave it a somewhat jerky walk, and it was by no means so active as formerly. On the 412th day this condition was still unchanged. The experiment was then stopped.

*Experiment VI.*—A small Rhesus monkey (*Macacus rhesus*) was fed only on boiled lathyrus peas (Lot 2), and on this diet it thrived and kept



perfectly well till the 138th day, when the left hand became flexed at the wrist (like drop-wrist), both ankle-joints were much dorsiflexed, and the toes strongly curved on the soles of the feet. It was able to move about and grasp quite well, but walked awkwardly and on the outer sides of its feet. Two days later the right hand showed drop-wrist. It continued in this state, sometimes a little better, sometimes worse, and much weaker in its movements, till the 151st day, when it was put on peas cooked by steaming. With these the symptoms become somewhat more marked. On the 214th day feeding with peas of Lot 3 was commenced, and eleven days later the paralytic symptoms had almost entirely passed off. It was then kept without food for twenty-four hours, and next day ate about 200 grams of the peas. For three days afterwards the toes were strongly flexed, and all its limbs paretic. It improved again, although not very active. On the 274th day feeding with steamed peas of Lot 4 was begun, and in one day it had again developed marked flexure in the joints of the hands and feet, which continued till the 291st day, when a diet of bread and milk was substituted for a month. On this it rapidly recovered, except that its toes remained with a distinct tendency to flexure. On the 322nd day steamed peas (Lot 4) were substituted for the bread and milk, and three days later it was again very paretic; the hind limbs and loins were distinctly weak, and the toes flexed. By the 337th day the muscles of the hind limbs and loins were thin and wasted, and very weak. It kept its toes curved on the soles almost continuously. On the 358th day there was such contracture of the hamstring muscles that it could not put its left heel to the ground. It walked on the toes, and this gave it a distinct limp. The loin and leg muscles were very wasted. Drop-wrist was marked.

From the 372nd to the 426th day it was fed on Lots 5 and 6, but remained much in the same condition, except that the right leg became more paretic, and it entirely ceased to climb, although it ran about. Gradually all the muscles of both legs became very paretic and wasted, the flexures passed off, and its gait became a dragging shamble. On the 427th day it was put on ordinary diet, and after nineteen days back again to lathyrus. There was no marked change. On the 511th day it was fed on lathyrus grain (Lot 7), obtained specially through the Indian Government from Damoh (C. P.), and grown on wheat lands. This was continued till the 551st day without much further effect, when peas from Seoni (C. P.) were substituted (Lot 8, grown on wheat lands). It became at once extremely paretic, and after fourteen days was put on ordinary food for twenty-seven days, during which time it again recovered slightly, but relapsed when the Seoni peas were resumed. Its lower limbs were almost powerless, the back was bent, the arms weaker, and it spent a great part of its time lying down. On the 606th day feeding was begun on Lot 9 (small lathyrus peas)

and continued for fifteen days, when it was again changed to ordinary diet. The paralytic condition did not improve. Its legs were specially affected, but all its muscles were paretic; it was unable to climb, and in walking it progressed on its upper limbs, dragging its legs after it. The condition was exactly the same as that described by Kinloch Kirk in man: "It may go on to complete paralysis, the person then lifting himself about on his hands." The hamstring muscles had contracted very much and bent the knees permanently, and it was evident that the animal was suffering from peripheral paralysis with contractures. Although changed again to ordinary diet for three weeks no improvement took place. The paralysis had become permanent.

It was killed on the 640th day. The hamstring muscles were much contracted so that the knees could not be fully extended, and the muscle substance looked dry and pale. There was a complete absence of subcutaneous fat. The viscera were perfectly healthy. The brain, cord, the peripheral nerves, and pieces of muscle were examined carefully after hardening, but no structural changes were evident.

*Experiment VII.*—A large bonnet monkey was fed exclusively on cooked lathyrus peas (Lots 2, 3, and 4), which it ate in very large amount (about 150 to 200 grams daily) for 208 days continuously. On the 75th day it first developed flexion of its toes and weakness in the left leg, and later a tendency to drop-wrist. It became less active and much tamer. Its symptoms never developed further, and while it was being fed on Lot 3 of the peas it lost them entirely. It thrived well and got fat. On the 208th day the lathyrus diet was dropped for a month, during which it became stronger and wilder, and seemed to have recovered completely. On resuming feeding with the peas (Lot 4), on the 239th day it became in a few days again distinctly paretic, especially in the left leg, which often dragged a little. The experiment was stopped on the 255th day, and a few days later it was, to outward appearance, perfectly well and normal.

*Experiment VIII.*—A small bonnet monkey (1757 grams) was fed on cooked lathyrus seeds (Lot 2), as much as it cared to eat. On the 62nd day the right hand and forearm were flexed, and it did not use the limb. Next day its legs were very weak, and on the 66th day there was marked drop-wrist in both fore limbs, the back was curved outwards, and its legs weak. It gradually recovered to a large extent, but on the 77th day the left leg was flexed on the thigh, the thigh flexed on the abdomen, the foot dorsiflexed and inverted, and the toes flexed. The whole limb was held up, and the animal ran about actively enough on the other three. There were apparently no sensory disturbances, and the reflexes were not increased. It could grasp and climb fairly well. For nine days the left leg remained flexed and held up, and the right arm also became semi-paralysed, but four days later the animal

had gradually returned to much its normal condition. On the 120th day both hands and feet were much flexed, the left being worse than the right; no increase of reflexes. This condition continued till the 128th day, when feeding was begun on Lot 3 of the peas, and ten days later it was nearly normal. On the 140th day it ate a very large amount after being kept without food for twenty-four hours. Next day there was extreme paresis, it could just move feebly and unsteadily, but there was no contracture of the muscles nor flexion of the joints. On the following day it had practically recovered. It remained slightly affected or almost normal as long as it was fed on Lot 3 of the peas. On the 188th day feeding was begun on Lot 4 of the peas, and next day paresis was marked, and on the third day the monkey was lying down and unable to hold up its head. It recovered a good deal in the following days, and on the 207th day was put on a diet of bread and milk for a month. It remained paretic, there was only a certain amount of improvement, and when it was again put on an exclusive lathyrus diet (Lot 4) on the 237th day, the paresis, drop-wrist, and flexion of toes returned at once. The severity of the symptoms varied a good deal from day to day, but it was never entirely free from them.

On the 260th day an amount of impure alkaloid extracted from 5 kgrms. of seeds was given hypodermically. In an hour paresis of limbs was very marked, and the face pale. The right leg became completely flexed and held up, and the right arm was flexed at the elbow and wrist joints. Next day the hind legs were very paretic and gave way in walking. On the third day the general muscular feebleness was still marked, but it had recovered considerably. The reflexes were never increased. A second (smaller) dose was then given, and in two hours it could scarcely walk or climb. The arms and legs were both very weak, and when it sat it required to rest also on one hand to keep its balance. It walked on the tips of its toes. On the following day it had recovered considerably.

The experiment was stopped on the 266th day. The viscera were healthy. The spinal cord, sciatic nerve, and pieces of muscles from the arms and legs were hardened in Müller's fluid, and examined microscopically, but showed no pathological changes.

*Experiment IX.*—A small female Rhesus monkey was fed on cooked lathyrus peas exclusively (Lot 2). On the 16th day it was less active, and on the 17th was definitely affected, the fingers and toes being flexed at the joints and curved in on the palms and soles. There was no rigidity and no increase of reflexes. Next day the wrists and ankles were also flexed. It moved about actively and could extend the fingers and toes and grasp with them quite well. Two days later it was normal again. On the 25th day there was a similar attack, which also soon passed off. It was as if the flexor muscles overpowered the



extensors. It remained active and lively and could move and climb well. When the toes were very flexed and curled up on the sole it walked on the outer sides of its feet. The more it ate the more marked were the symptoms, and when fed on Lot 3 of the peas it improved greatly, becoming worse again when changed on to Lot 4. Its general health remained quite good, and for more than a year its symptoms did not develop further than paresis and flexion of the hands and feet as just described. On the 408th day the lathyrus feeding was stopped for a month. It became stronger, but did not completely recover from the parietic condition and flexion of the toes. The lathyrus feeding was resumed on the 439th day, and next day it was distinctly more affected. There was marked flexion of the toes, both hands were in the drop-wrist position, and it was less active. By the 485th day it had gradually become much weaker, especially in the loins and legs. Its gait when it went on all fours had become very stiff and jerky (spastic in appearance) owing to shortening of the hamstring and calf muscles, and a side-to-side movement of the pelvis gave it a waddling character. No increase in reflexes could be elicited; there was marked drop-wrist and great feebleness in the extensor muscles of the arms and legs. Fibrillary tremors were present in the muscles. There was no wasting of the muscles, and the animal was plump.

From the 496th to the 553rd day it was fed on two other samples of lathyrus (Lots 5 and 6), with the result that the symptoms became slightly less marked. From the 554th to the 573rd day it was put on ordinary diet and improved still further. When again given lathyrus it soon fell back into its previous condition of muscular weakness, but remained plump and in very good general health. On the 637th day feeding was begun on lathyrus grain specially obtained through the Indian Government from wheat lands at Damoh (C. P.) (Lot 7), and on this it improved somewhat. Another specimen (Lot 8, grown on wheat lands at Seoni, C. P.) proved to be more poisonous, and caused marked deepening of the general paresis, with wasting of muscles. After an interval of ordinary diet (twenty-seven days), during which it recovered some of its activity, the same peas again caused very great paresis, which improved somewhat when it was fed on Lot 9 (small peas). On the 755th day it was started on Lot 6 again, and by the 775th day had become very parietic, was slow and careful in its movements, and far from active. There was wasting in all its muscles, which seemed to be all about equally parietic. There was no increase of reflexes. Its general health had remained quite good throughout the experiment, but the wasting and paresis of muscles was not recovered from till after three months of ordinary food, when the animal was again apparently normal.

*Experiment X.*—A small bonnet monkey was fed exclusively on cooked lathyrus peas (Lot 8, the large variety, grown on wheat lands),



and after thirty-two days it was distinctly weaker and a slight paresis of the left leg was noticeable. By the 53rd day this was more marked, and the leg was held up slightly bent at the joints, otherwise it was in good health. The experiment was stopped, as it did not promise any new results.

*Experiment XI.*—A small bonnet monkey was fed on peas of *Lathyrus sativus* (Lot 6), cooked by steaming. At the end of two months it was distinctly less active, and at the end of four months it had completely lost its activity and nimbleness. It moved about slowly and carefully, climbed laboriously, was especially weak in the loins and legs, and was very evidently suffering from general muscular paresis. No contractures were ever observed. Although it was fed continuously on the same peas the symptoms varied considerably in intensity at times. It recovered completely.

These experiments reproduce in monkeys only some features of the disease Lathyrism as it is seen in man. The chief action of the poison is a paresis of motor nerves, which soon passes off if the peas be discontinued, but may become permanent after prolonged feeding, as if some slight degree of nerve degeneration had occurred. In some of the animals it was accompanied by marked wasting of muscles, in others not. In such of them as died, the cause of death was paralysis of the respiratory muscles, but in most of them the course of the poisoning was chronic, non-fatal, and painless, and the degree of paralysis was such as is seen in a human case of slight or moderate severity. In none of them was there an increase of the deep reflexes or any symptoms of spastic paraplegia. In Experiment I. there were symptoms pointing to an action on the spinal cord or brain. These were irritative in character, and Desparanches has described somewhat similar convulsive movements as occurring in man. In some of the experiments flexion of the joints was a frequent symptom; but it invariably passed off in a few days, and seemed to depend on peripheral paralysis of extensor nerves rather than on a central action, but this was difficult to determine with certainty. Proust mentions "contractures" in man as an early symptom.

The experiments illustrate very clearly widely different degrees of susceptibility, and this is what occurs so often in man. The time required to develop characteristic symptoms varied greatly in the eleven experiments. I satisfied myself that this did not depend on the amount eaten, as the two monkeys (IV., VII.) which were least affected had very large appetites. The chief symptoms are due to paresis of the motor nerves, and in monkeys the poison affects

both the upper and lower limbs, the latter more deeply. The extreme peripheral nerves were first affected—those of the hands and feet—and, further, the extensor muscles were selected very markedly in preference to the flexors, which, however, in the more prolonged experiments, also became affected (VI., IX.). Continuous lathyrus feeding seems to keep up a degree of paresis, which I often noticed to deepen about two hours after each meal, the increase passing off in other two hours or so. At intervals the symptoms become more intense for a few days, and then slacken off again. These exacerbations were a marked feature of the experiments, and during them pallor of the face often became pronounced. A very large meal (VIII., VI.) or a dose of the impure active principle caused more widely spread and deeper paresis, which lasted for two or three days.

When the lathyrus feeding was stopped in the early stages complete recovery took place, but after a time recovery ceases to be complete. This is seen in Experiments V. and VI., where a certain degree of paresis was permanent, and where the flexor muscles of the legs, being unopposed by the paralysed extensors, gradually shortened, so that the knee and ankle did not extend properly, and this imparted to the animal an abrupt jerky action of its legs and an altered gait, but this also may pass off to a large extent, or entirely (IX.). After very prolonged feeding both the flexor and extensor muscles of the limbs may become paretic, wasted, and feeble, the tendency to flexion passes off, and the gait is simply shambling. In most of the animals the muscular and general nutrition remained very good, but in III. and IX. (for a time) all the muscles wasted, and in VI. the muscles of the loins and legs became much atrophied.

*Rabbits.*—Five large rabbits were fed on raw or cooked peas (Lots 1 and 2) exclusively for nearly four months. They ate about 150 grams daily each, and at the end of the experiment they had thriven well and increased in weight. Three young rabbits proved equally insusceptible. There were absolutely no symptoms of poisoning.

Rabbits, however, are not immune to the poison. An amount of brown smeary impure alkaloid extracted from 5 kgrms. of the peas was dissolved in water and given subcutaneously to a small rabbit (1000 grams) at 12.20. At 12.30 it was paretic, breathing rapidly, and disinclined to move; at 12.40 its legs were sprawled out and it could not sit up. It gradually became more paralysed, and died at 12.55. An examination was made at once, and the sciatic

nerves gave on faradic stimulation a mere twitch of the muscles, much less than when the muscles were stimulated directly. The heart was still beating well, and the viscera were normal. Death had probably taken place from paralysis of the nerves of the respiratory muscles.

In ordinary feeding experiments the rabbit does not get enough poison to produce symptoms, and it is evidently not very susceptible. When a large dose is given subcutaneously, it seems to paralyse rapidly the terminations of the motor nerves.

*Pigeons.*—Three pigeons were fed on raw lathyrus seeds (15 grams to 60 grams daily per pigeon) for 163 days. They thrived well and increased in weight. Three others were fed on the steamed peas for 90 days without any result.

A pair were fed on 30 to 60 grams daily per pigeon of boiled peas for 259 days. They remained perfectly well, and hatched out young twice. The young were fed exclusively on the peas (cooked or raw), and grew and thrived normally. They never had any other food.

*Ducks.*—Two young ducks were fed on the boiled seeds, but they did not eat them very freely. One died in 15 days, after rapidly losing flesh; the other had no special symptoms after 52 days, but had not thrived well, and was very thin.

*Pigs.*—The following experiments were carried out at the laboratory of the Board of Agriculture with Lots 2 and 3 of the peas.

During 91 days a pig consumed 211 lbs. of the peas raw. Its weight rose from 60 to 130 lbs. During the same time another pig consumed the same amount and gained 72 lbs. in weight. There were no signs of poisoning.

*Sheep.*—A sheep was given 2 lbs. of raw peas daily for 17 days, and, after an interval of 14 days, 2 lbs. daily for 70 days. A second sheep got 2 lbs. daily for 48 days. Both animals fattened well, and showed no symptoms of poisoning.

#### THE ACTIVE PRINCIPLE.

Attempts to determine the nature of the poisonous principle have not been wanting. Many of these have had negative results, but others have been more successful. I have found it impossible to consult all the original papers, but summaries of the various investigations have been given by Schuchardt<sup>33</sup> and by A. Buchanan.<sup>7</sup>

Teilleux (1840) got from the seeds of *L. Cicera* a resinous



substance, which, in doses of a few grammes, caused paralysis, twitchings, and slow death in rabbits. Bourlier<sup>5</sup> with ether and alcohol extracts succeeded in poisoning frogs, tortoises, and sparrows. Death occurred after a few hours to several days, and the chief symptom was motor paralysis. He is of opinion that it acts on the posterior and lateral columns of the spinal cord. Marie<sup>29</sup> got from *L. Cicera* a small quantity of an alkaloid, which, however, caused no characteristic symptoms of lathyrism in animals. Louis Astier<sup>2</sup> got a definite volatile alkaloid, which he called lathyrin, but with which he made no animal experiments. He made some experiments with an alcohol extract, 2 to 8 decigrammes of which given subcutaneously caused tremors and, finally, paralysis or paresis of the hind legs in dogs. Blaise made experiments with a glycerine extract, but the results were indefinite and probably attributable to the glycerine.

I was able to extract the alkaloid only in very minute quantity, although several methods were tried. Two kilogrammes of the powdered seeds were exhausted with tartaric acid water, the water evaporated to a small bulk, and the sugar precipitated with 90 per cent. alcohol. The alcohol was distilled off, the residue made alkaline with sodium carbonate, and shaken with chloroform. On distilling off the chloroform it left a small quantity of brownish smear. This was extracted with hydrochloric acid water, the solution made alkaline with sodium carbonate solution, and again shaken out with chloroform. On evaporating the chloroform it left an amorphous alkaloid, which gave a crystalline salt with hydrochloric acid. The purified salt only weighed 0.017 gram. It was readily soluble in water, and its solution gave precipitates with phosphomolybdic acid, auric chloride, picric acid, tannic acid, Boucharlat's reagent (I in KI), Mayer's reagent ( $\text{HgCl}_2$  in KI), and with potassium hydrate, ammonium hydrate, and sodium carbonate solution. The base was soluble in chloroform, ether, and acetone.

The poisonous body is present in very small amount, and in the seed itself, as 300 grams of the seed husks treated in the above way yielded a mere indication of the presence of an alkaloid.

*Experiment I.*—A white mouse got 0.015 gram subcutaneously of the pure alkaloid hydrochloride at 12.28. At 12.40 it was very paretic, lay on its belly, and would not move. It remained paretic and breathing rapidly all day. On the third day it was still paretic and feeble, lay on its belly with its legs sprawled out, and on exertion breathed very rapidly. On the fourth day it was found dead.



*Experiment II.*—Paresis for several days was observed in another mouse after a similar dose. The animal survived.

*Experiment III.*—Frogs which got doses of about 0.02 gram of the pure alkaloid hydrochloride hypodermically became paralysed in 20 to 30 minutes. At first the sciatic and brachial nerves responded to faradic stimulation, but after several hours this ceased, although the muscles reacted freely. The heart went on beating or stopped in diastole. The eye reflex was lost early, and the spinal cord seemed to be greatly depressed.

*Experiment IV.*—An amount of unpurified alkaloid obtained from 5 kgrms. of seeds was given to monkey VIII. per os. It soon became very feeble and paretic, and next day could not climb or jump. The left leg was much more paralysed than the right. The digits of the hands and feet were strongly flexed. It seemed to be a motor paresis, affecting certain nerves more than others; there was no spasm, and no increase of reflexes. On the third day it was still very feeble, but able to move normally, and on the fourth day its movements were again active.

A more thorough study of the chemical properties and physiological action of the alkaloid would necessitate its isolation on a manufacturing scale, and must be left over to some future time. Without such a detailed study it is impossible to elucidate or explain the pharmacological action of the active principle.

#### RESULTS.

1. Both the large peas (grown on dry wheat lands) and the small peas (grown on wet rice lands) of *Lathyrus sativus* are poisonous.
2. Different samples of peas vary greatly in toxicity.
3. The poisonous substance is an alkaloid.
4. Certain species of animals are very much more susceptible than others.
5. Individual susceptibility varies greatly in the same species.
6. With ordinary samples of the peas and in susceptible animals feeding has to be carried on for some time before toxic symptoms develop. Occasionally, however, the peas seem to be more poisonous and capable of causing more acute poisoning.
7. In monkeys and in other susceptible lower animals prolonged feeding seems to cause a greater or lesser degree of paralysis of the peripheral nerves, along with other symptoms due apparently to an action on the central nervous system.
8. A single large dose of the alkaloid paralyses the terminations

of motor nerves, but other parts of the nervous system are also affected.

9. Histological examination of the muscles and nervous system in poisoned monkeys showed no structural changes.

*Lathyrus sativus* forms a very cheap and easily grown food-stuff, and the practical question of growing a constantly non-poisonous variety could be most easily worked out in India by scientific botanical experiments. As it is, many samples have a very slight toxic effect. If it is found that the peas cannot be grown free from poisonous properties, it should be possible to devise a quantitative chemical method for determining the amount of alkaloid present. Feeding experiments on monkeys are much too tedious and uncertain for practical purposes, but they could be used as a test and guide in conducting the botanical and chemical investigations. Incidentally, highly poisonous varieties may be grown, and then it would be possible to isolate a sufficient amount of the alkaloid to ascertain accurately and in detail its pharmacological action.

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\* Seen only in abstract.

## LATHYRISM IN MAN.

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WHILE engaged in investigating the action of *Lathyrus sativus* I was struck with the meagreness of the descriptions of the disease "Lathyrism" given in our current text-books of general and tropical medicine and toxicology. The literary material for a full account of the main clinical features is excellent and abundant enough, but it does not seem to have been utilised very fully by the compilers of text-books. It is rather scattered, and some of the original papers are practically not procurable, hence I thought it might serve a useful purpose to publish in abstract those parts of the more important contributions on the subject which are of strictly clinical interest, and to add a few comments.

Lathyrism in man is a chronic nervous disease due to the habitual use as food of the peas of certain species of *Lathyrus* (vetchlings); it occurs endemically and epidemically, and is first described in the writings of Hippocrates. The symptoms appear only after the peas have been eaten for some time, the length of time varying a good deal—probably according to the quantity consumed and the amount of poisonous alkaloid present. But individual susceptibility also appears to have a considerable influence, as only certain persons in communities and families suffer, even when all are apparently equally exposed.<sup>17</sup> A striking feature in every epidemic has been the large number of men affected as compared with women—generally estimated as ten or twelve to one. Two explanations of this have been given, the one, that men habitually eat more than women, the other, that men are more exposed to cold and wet and fatigue, conditions which seem to accentuate the action of the poison.

I have grouped the abstracts under the headings Onset and General Symptoms, Gait, Electrical Reactions, Pathology and Diagnosis, and Treatment.

## ONSET AND GENERAL SYMPTOMS.

I propose to begin with the description given by Colonel Andrew Buchanan,<sup>7</sup> I.M.S., parts of which I quote nearly verbatim: (1) "If a man eats teora for about two months he



gets cramps in the calves of his legs, and if he then stops eating the grain he may recover almost entirely, or only a little stiffness of his legs may remain. He is able to walk about without the aid of a stick, but an up-and-down movement of his shoulders may be noticed when he is walking. His toes may drag slightly on the ground." (2) "If he continues eating teora he may experience a somewhat sudden onset of paralysis. If he then stops eating teora he will improve, and in a few weeks he will be able to move about, but with the aid of a long stick. His toes will scrape the ground, and the muscles of the back of his legs will be rigid." (3) "If he should still go on eating teora he will lose control over the bladder and rectum sphincters. If he stops eating teora he also will improve, and he will be able to move about after a few months, but he will require to support himself with two sticks." (4) "A very small number of cases are unable to stand even with the aid of sticks."

The accompanying photograph (Fig. 1), which was sent to me many years ago from India, represents patients in stages (1), (2), and (3). It was taken during the course of Colonel Buchanan's investigations.

Buchanan describes the knee-jerk as increased in all cases, sometimes more on one side than on the other, and the foot-clonus as increased only in the severe cases. The muscles in the back of the leg are rigid; in one case he describes the foot as in extreme talipes equinus, and almost in a straight line with the leg. The muscles were found, as a rule, to be well nourished. Bed-sores were never seen. The paralysis of the sphincters passes off in a few weeks, sexual power is diminished or lost, but it may return. Sensory symptoms precede the paralysis—chiefly cramps, a feeling of tightness in the leg tendons, tingling, pins and needles, and weakness at the waist. Colonel Buchanan has informed me that although he saw as many as 220 cases in one day, he never saw one at the beginning, and this applies to nearly all the other recorded descriptions. Talipes equinus, for instance, must be a late symptom due to permanent contracture of the calf muscles, and can therefore hardly be regarded as an action of Lathyrus. The description of the early stages reads as if the patients were suffering from slight peripheral paralysis, and this is also suggested by the sensory symptoms.

Cantani,<sup>9</sup> in reporting three cases (old-standing), describes the muscles of the lower limbs, and especially of the legs, as being wasted. When the patients lay on their backs the limbs could







1 and 2. Able to walk with one stick in one hand.  
 3, 4, 5, 6. Able to walk with a long stick held by both hands.  
 7 and 8. Able to walk with a long stick held in each hand.

be freely moved and fully extended, but they bent them badly at the knee, and raised them horizontally with difficulty. The reflexes are stated to have been well preserved, and there were no sensory disturbances. In these cases there must have been considerable paresis of the muscles of the lower limbs, but apparently very little or no implication of the spinal cord.

Brunelli,<sup>6</sup> who saw his eleven cases two years after the commencement of their illness, describes their muscular nutrition as normal, the sphincters as normal, and the patellar reflexes as increased and very sharp. There were no sensory troubles. There was marked rigidity of the legs. The earliest symptoms were weakness and tremors in the legs, and these disappeared if the lathyrus bread were stopped, but if it were continued for two or three months spastic tabes came on. The description of the end-symptoms seems to indicate degenerative changes in the motor tracts of the cord, preceded by symptoms of paresis.

Hendley<sup>10</sup> states that there are no premonitory symptoms, and that the disease comes on suddenly after exposure to cold and wet. The legs are weak, stiff, and trembling, and in ten days such a degree of paralysis develops that walking is difficult. Both legs are usually affected simultaneously, first the calves, then the thighs, and soon after sexual power is lost. In typical cases of some six weeks' duration there is no wasting, no loss of muscular tone, no true tremors, but only tremblings of the entire limbs when the weight of the body is put on them. The other muscles are unaffected. The tendon reflexes (knee and ankle) are much exaggerated, sensation is unaffected, and the rectum and bladder sphincters act normally. He states that he saw "many hundreds" of cases.

Grandjean,<sup>12</sup> in describing fourteen cases, says that the earliest symptoms are lumbar pains and heaviness in the legs. This is followed by loss of control in the legs, which are thrown about right and left in walking. Formication, spasms, and sometimes lightning pains are present. In the early stage the patient can raise his leg when lying on his back; later he cannot do this. Resistance to passive movement is maintained. When the case is fully developed the paralysis is increased, sensation is preserved in the severest cases, even if sometimes diminished, the patient can walk with his eyes shut, and the bladder and rectum are sometimes paralysed.

Kinloch Kirk<sup>24</sup> states that the loins and posterior muscles of

the thigh and leg lose their power, and the man drags his toes along the ground in walking. This may go on to complete paralysis of the lower limbs, the person then lifting himself about on his hands. Its severity varies from a slight dragging of the lower limbs to complete paralysis.

Irving<sup>23</sup> summarises the history of fifty cases which had been brought together for him to examine. All had become paralytic during the rains, in most cases suddenly, and often during the night. Men who had gone to bed quite well awoke in the morning feeling their legs stiff and their loins weak, and had never regained the use of their limbs. At first the lameness was trifling, amounting only to unsteadiness of gait and slight stiffness, chiefly of the knees. After a time the muscles of the thighs and loins commenced to ache and felt weak. There was no pain, and the legs were not much wasted. It does not tend to shorten life. Sensation to pinching was not blunted, but cold was felt more acutely in the legs than elsewhere. In some of the cases which he reports in more detail it is mentioned that the muscles of the legs were much wasted.

Proust<sup>31</sup> examined ten cases himself and got notes of other ten. All the cases were fully developed and had nearly identical symptoms. The onset was sudden after exposure to cold and wet, with pain in the lumbar region, often intense, and spreading to the hips and thighs. There were painful cramps, contractures, tingling, incontinence of urine, impotence and frigidity which decreased in time but never completely disappeared. The rectum was not involved. Later, there was complete loss of sensation in the legs to heat, pain, and touch. The outstanding feature was paralysis or paresis of the legs, sometimes also of the loins, and rarely and slightly of the arms. Sometimes there were slight muscular tremors. There were no trophic changes and no ataxic phenomena. The patellar and ankle reflexes were much increased. He says this exaggeration of reflexes is not present at first, and appears to diminish after a time. The incontinence of urine and the sensory symptoms also disappear after some months. There is sometimes complete recovery from all the above symptoms.

Chevallier,<sup>11</sup> quoting Desparanches, describes the usual condition as an incomplete paralysis of the legs, with difficulty and even impossibility of walking. He states that at first there are slight convulsive movements in the muscles of the arms and legs, with great weakness of the inferior extremities, or sudden



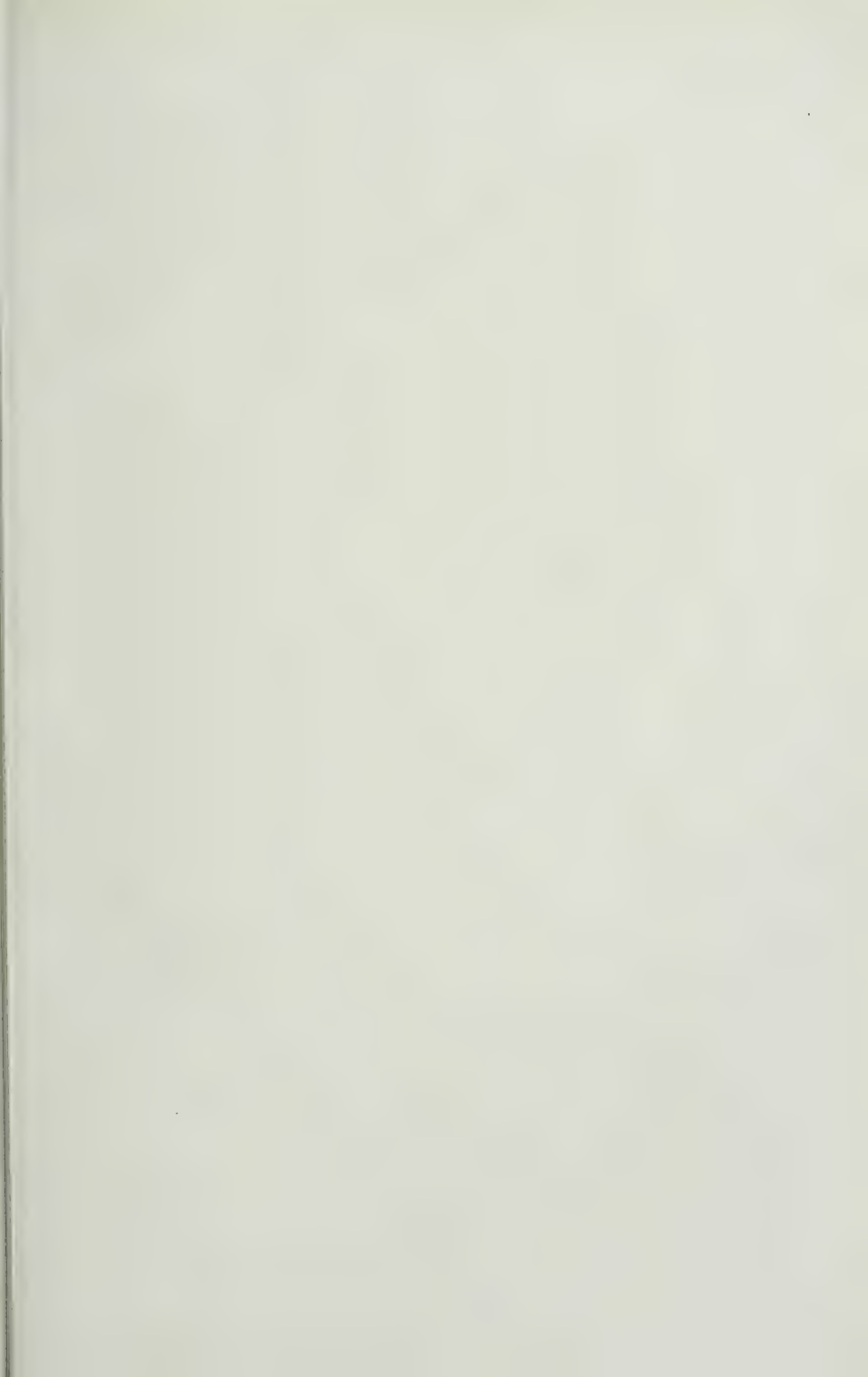




FIG. 2.

inability to walk, or dragging of the legs with an inclination inwards, or complete paralysis.

Don<sup>14</sup> says that the eating of *Lathyrus* causes "a most surprising rigidity of the legs, insomuch that the extensor muscles could not be reduced or have their natural action restored. These symptoms usually appear on a sudden, without any previous pain. The disease was regarded as incurable, and, being neither very painful nor fatal, those who were seized with it usually submitted to it with patience." He, however, was quoting from others.

Dufour<sup>15</sup> (quoted by Schuchardt) describes a case, due to *Lathyrus Cicera*, in a Kabyle, who had both hands semiflexed and their flexor muscles contracted. The ball of the thumb, the opponens minimi digiti, the interossei, and the muscles of the forearm were all atrophied.

#### THE GAIT.

The gait has been described in great detail by most observers. I shall merely transcribe or condense their descriptions.

Colonel A. Buchanan: "The mild case has to raise his body high before the toes will leave the ground, and the up-and-down movement of the shoulders is the chief symptom that we notice. The more severe cases use one or two sticks, and these sticks are always long. One stick is put forward and then the upper part of the body sways forward; the body becomes erect before the other stick is put forward. The dragging of the toes is the most marked symptom. The inner side of the nail of the great toe is worn away, and in bad cases the upper surface of the outer toes may be rubbed. There is nearly always a tendency to cross-legged progression."

In the *Journal of Tropical Medicine* (1899, I.) the following description is given, along with a photograph by Capt. W. J. Buchanan,\* which I have been allowed to reproduce (Fig. 2) by permission of Messrs. Bale, Sons & Danielsson. The photographs show the spasm of the adductor muscles of the thighs and the contraction of the calf muscles, which explain the cross-legged and the raising of the heels so that the body is supported on the metatarsophalangeal joints. This is an end-result of the lathyrus action, not an early stage.

"During progression the body weight is thrown perpendicularly first on one lower extremity and then on the other, causing a waddling, rolling gait, and when the patient attempts to stand

still, one foot is planted below the centre of the axis of the trunk, whilst the other is either advanced, retracted, abducted, or crossed over the supporting limb, so as to maintain the balance. When the paralysis is more complete the patient can progress only on crutches, the lower extremities being dragged forward, with the toes scraping the ground. In the most advanced stage of the disease the patient can only move about in a sitting posture, the upper extremities being used as a pair of supports on which the body is swung forward."

Hendley<sup>19</sup> says that six weeks after the beginning of the illness the gait is typical. "Aided with a long two-handed staff walking is possible, the rate being under two miles per hour. The body above the hips sways from side to side, whilst the feet are lifted with evident difficulty and dragged forward, the toes scratching along or barely clearing the ground. The leg bearing the weight of the body is bent at the knee and trembles, whilst the advancing leg, dragged wearily forward strongly adducted, is planted unsteadily in front of its fellow, the toes reaching the ground first. The general effect is one of laboured unsteadiness, due to great weakness. The evident spasm of the thigh adductors ceases to be very apparent when the patient reclines on his back, when the thighs can be separated, usually without resistance, to a normal extent."

Cantani<sup>9</sup> describes the walk of his patients "as if stepping from one stone to another." The thorax was carried bent forward and the pelvis behind it. The feet were put abnormally on the ground because the adductors of the thighs were stronger than the abductors and drew the feet close together or even crossed them, while the heels were raised so that the body was supported on the metatarso-phalangeal joints, the great toes not being lifted, but scraping along. Walking backwards was very slow and laboured, and was carried out by the hip muscles (not by the hamstrings), the motion of the leg and foot backwards being opposed by the peronei. They stood upright with difficulty and swayed unless supported.

Brunelli<sup>6</sup> also draws special attention to the overaction of the thigh adductors and the calf muscles, describing the legs as pressed together by the contraction of the adductors of the thighs, the toes contracted in flexion, and the heel raised from the ground by the gastrocnemius. One man walked absolutely on the balls of his feet. The legs were very rigid, and walking was much impeded, the steps being short and the feet dragging on the



ground. In walking they supported themselves best with a long stick, which they grasped high up with both hands. When seated they required a great effort to rise and to overcome the muscular contracture.

Kinloch Kirk's<sup>24</sup> description presents a very different picture to this, but one which agrees closely with Hendley's. "The toes are turned slightly in and dragged on, with difficulty lifted from the ground; the limbs and joints appear loose, weak, and agitated, and *give* so much at every step that while the person is walking the figure has a continued up-and-down motion." I have seen this stage often in monkeys, in which the knees give way in walking and the legs are very paretic and weak. It passes off if the lathyrus feeding be discontinued.

Proust<sup>31</sup> says that they walk on the ball of the foot, the great toe bent, and the nails worn. The toes are bent round as if pulled by a cord, the foot being in extension and adduction. The inner side of the foot, and especially the great toe, is marked by cicatrices from abrasions made in walking. The foot is raised with difficulty, and, with the effort made to raise it entirely and carry it forward, the trunk overreaches and then falls back as if to counterbalance the weight of the leg, which is agitated by an involuntary tremor as soon as it again touches the ground.

Grandjean<sup>18</sup> says the gait varies. Some make alternate movements from each side of the pelvis; others hold the body bent forward; others make long strides.

The descriptions of Irving and other writers do not differ in any essential particulars from the foregoing, and hardly need to be repeated here.

#### ELECTRICAL REACTIONS.

The information on this head is scanty. With the interrupted current Proust found that the leg muscles gave a feeble response in comparison with the arm muscles (which were unaffected), and Cantani that the response was feeble in all his cases. Grandjean simply says that the muscles contract to electric stimulation. Both Brunelli and Cantani state that electric sensibility may be decreased, increased, or normal.

With the constant battery Cantani found in one case that the descending current gave weak contractions, and only on closing, the contractions being weaker in the right leg than in the left, and in the flexors than in the extensors. With the ascending current there was no contraction on closing or opening.

The results with the faradic current seem to point to diminished irritability of the motor nerves, as if they were slightly paralysed.

#### PATHOLOGY AND DIAGNOSIS.

No satisfactory examination of the spinal cord and peripheral nerves has ever been made. The site of the lesion can therefore only be deduced from the symptoms, and here we find considerable difference of opinion.

Buchanan says the symptoms correspond exactly with those of Erb's spastic paraplegia, and are due to degeneration of the crossed pyramidal tracts in the cord. Brunelli also calls it "spastic paraplegia." Grandjean uses the term "ataxic paralysis." Irving calls it "paraplegia," and also "a form of paralysis of the lower extremities," attributing the frequent sudden onset to "rheumatism" brought on by exposure to cold and wet in persons predisposed to it by a lathyrus diet, and in this view Hendley agrees with him. Kinloch Kirk also uses the term "rheumatism." It is very probable, and support is lent to this view by numerous clinical histories, that the nervous system is rendered by the alkaloidal poison in the peas specially susceptible to the deleterious influence of cold and wet, but many cases occur without exposure, and there can be no doubt that a lathyrus diet is the essential cause of the disease. Proust coined the name "*lathyrisme médullaire spasmodique*," and expresses the opinion that the symptoms correspond to a transverse myelitis followed by degeneration of the lateral columns. The opinion has also been expressed that it is a combined degeneration of the lateral and posterior columns. Brunelli calls it "tabes dorsalis spasmodica." Lastly, Cantani held that the seat of the disease is in the muscles. He excised a small piece of one of the flexors of the leg and found some degeneration of the fibres. Even if the observation is correct, it is probably only a secondary change in consequence of nerve degeneration.

#### TREATMENT.

Treatment is generally said to be futile if the disease is fully developed. Nevertheless both Buchanan and Proust state that well-marked cases often recover spontaneously. Buchanan says that Dr. Quinn in over 300 cases found strychnine of no value, but that Major Sutherland, I.M.S., found it beneficial. He himself tried numerous medicines, and the only treatment which seemed to give any amelioration was repeated blistering with

mercuric iodide ointment over the spine and sciatic nerves. Irving used strychnine, blisters over the loins, tonics, and good food, but came to the conclusion that the condition is incurable.

Proust used the thermocautery over the spine, and internally gave daily 2 grams of potassium bromide. He is of opinion that the results were fairly satisfactory. In ten cases four showed marked improvement, two were worse, one was doubtful, and three remained *in statu quo*.

Men never seem to suffer from acute Lathyrus poisoning as some species of animals occasionally do. The action on them is gradual and cumulative. The poison is in relatively small proportion in the peas, and the quantity of the latter eaten at any one time apparently does not furnish enough of it to produce symptoms of immediate or dangerous intoxication. The only writer who mentions the occurrence of such symptoms is Brunelli, who states that some of his cases were affected after meals by a kind of intoxication. In the course of my experiments on monkeys I saw this very often, and its occurrence in man may possibly be more frequent than has been noted.

As regards the main symptoms of the chronic intoxication, all writers are broadly in agreement, but they often differ considerably as regards details. For instance, all lay stress on the paralysis and the gait, which are the most outstanding features, but some of them record sensory symptoms, while others fail to find these. Marked anaesthesia and analgesia are described by Proust but not by other authors; wasting of the muscles is sometimes absent and sometimes present; the sphincters may or may not be involved; the gait varies to an extraordinary degree; the disease is found to begin suddenly or only after premonitory symptoms; there may or may not be ataxic phenomena. Pain at the waist and lightning pains in the legs are sometimes mentioned, more often not. The legs only are usually affected, but in rare instances the arms also suffer. Such variation in symptoms makes it improbable that the lesion is confined to a single tract in the spinal cord. In advanced cases the pyramidal tracts seem to be most affected, but the columns of Goll seem also sometimes to suffer. Judging from the effects seen in monkeys and other animals, and from certain of the symptoms reported in human beings, it is probable that the peripheral nerves, both sensory and motor, are also involved. Several of the clinical descriptions read as if *only* the motor nerves were affected, especially in the earlier stages of the disease.



The degree in which different nerve elements suffer must vary a good deal in individual cases.

The extent to which the motor nerves are involved, if at all, is an interesting point. Colonel Buchanan has informed me that there is one marked difference between lathyrism and spastic paraplegia, namely, that in the latter the patient raises the great toe when walking, while in the former the great toe is dragged and the nail usually worn away on the inner side. Permanent contractions of the muscles are also frequently recorded, and this is a condition which cannot be primarily due to lathyrus poisoning, but must result from paralysis of the opposing muscles, and therefore is a secondary and late result. It is a condition which is very common in peripheral neuritis. In beriberi, for instance, Vedder says that "contractions of the muscles, particularly of the calves, may occur, and may result in prolonged disability." Manson describes talipes equinus as a common result of the same disease. The same thing is seen in alcoholic paralysis. Vedder also draws attention to spasticity in beriberi: "A condition described by almost all observers is the spastic contraction of the affected muscles during convalescence, resulting in a gait resembling that of spastic spinal paralysis. The cause is obscure." In old-standing cases of beriberi I have seen very marked increase of the knee-jerk and the Achilles tendon-jerk, and I have frequently seen the same thing in chronic cases of alcoholic and arsenical peripheral neuritis, but neither reading nor personal consultation with authorities on the nervous system has afforded me any explanation of the phenomenon.

In the slighter cases of Lathyrism there is no characteristic gait, but merely a weakness and dragging of the limbs which can be readily recovered from, and this weakness is recorded by several observers as among the earliest symptoms. Hendley says that after its appearance ten days usually elapse before paralysis is fully developed, and the spastic gait only about six weeks after. According to Proust, the exaggeration of reflexes is not present at first, and appears to diminish after a time. All this seems to suggest a certain degree of peripheral neuritis.

No observer has ever described the progress and symptoms of a case from its beginning to its full development, and I have been unable to find any description of the actual clinical condition in patients unable to stand or walk. The very varying descriptions of the gait also suggest that in different stages of the poisoning different nervous elements are involved. It is very desirable that



a clinician accustomed to the detailed investigation of nervous diseases and with ample opportunity of examining a sufficient number of patients in *all* stages of the malady should reinvestigate the clinical manifestations, and that there should be a pathological examination of the spinal cord and peripheral nerves. The latter, however, will only determine the final and permanent results of the action of the poison, not the effects seen in the early stages.

Reference has already been made to the prognosis and treatment, both of which are far from encouraging. Late cases where the tracts in the cord are presumably permanently damaged, and in which the paralysis and deformities have become extreme, apparently hold out no hope of improvement. There is no record of treatment applied to early and milder cases, but many of them recover or improve spontaneously, and it is probable that effleurage and kneading applied to the nerves and muscles, along with electrical treatment, would materially assist recovery. In the later stages splints and other orthopædic measures properly applied would also help to overcome the contractures of muscles and get rid of the deformities and the results of these on the power of walking. The whole subject requires to be thoroughly reinvestigated, but this could only be done during an epidemic.

[For References to this article see "Lathyrism," p. 296.]

## CLINICAL RECORD.

## A CASE OF SYRINGOMYELIA.

By DAVID M. GREIG, C.M., F.R.C.S.(Edin.),

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THE subject of this somewhat rare disease was a man, aged 30, an assistant overseer in a jute mill, who complained of interference with his ability to work from the slipping out of the bone in the left shoulder during certain movements. His parents were dead—cause unknown. The only other member of the family, a sister, died at the age of nine months. He is married and has two healthy children—twins, aged one year and nine months. His previous personal history is good. Ten years ago he had a sore tongue, which troubled him for a fortnight, and for which he used a mouth wash. He has never had any form of venereal disease. Except for a whitlow on the left index finger two years ago, he has no illness to record.

He is a rather delicate-looking, ill-developed man, apparently younger than his years, of a sallow complexion, and somewhat pale lips. He has a slight cough, but examination of the chest does not elicit any signs of pulmonary trouble. His pupils are normal, his teeth good, and he has a rather high palate. He has suffered from what he calls "rheumatics" in his knees for some time, and complains of a jerkiness in walking. The left shoulder is enormously swollen, with prominent bulging in front and a few dilated veins on its surface (Fig. 1). There is a slight depression corresponding to the acromion and the outer part of the clavicle, and behind this is a large bulging obscuring the scapula. The anterior part of the tumour is very distinctly and the rest of the tumour less clearly fluctuant. The top of the shoulder has been blistered, and this he attributes to carrying weights at his work, and he feels the bone slipping out and in in certain movements of the joint. This luxation is easily produced by raising and rotating the humerus. The veins in the left upper extremity are very distinct, those in the right hardly observable, whilst the whole tint of the skin of the left is dusky. He has a slight postural dorsal kyphosis, and the spine presents definite rigidity. The upper part of the left chest is more prominent than the right, while the lower part



FIG. 1.—Syringomyelia, showing characteristic Spinal Curvature with Arthropathy of Shoulder.





of the right chest is more prominent than the left—a deformity resulting from a degree of vertebral rotation. He has a curious spastic gait, and says he has stiffness in his limbs and frequent cramp in the muscles of the calves at night. The tendon reflexes in the lower limbs are exaggerated. In walking the left limb is the stiffer, and the left foot catches at the toes on the ground and the boot is correspondingly worn. The walking, he thinks, is more difficult at the commencement and after resting, but improves when he has gone on for a little. Epicritic sensation is normal, except on the fingers of both hands. Protopathic sensation is not interfered with. He cannot distinguish heat from cold in the left hand, left arm, or left side of the body, but this inability stops at the middle line on the front but passes over the middle line behind. In the lower limbs the right has the sensation of being always warm, and he cannot distinguish heat from cold in it, though he can in the left. It is to be noted that when he had his whitlow in 1915, which necessitated amputation of the index finger through the proximal interphalangeal joint, the inflammation, which was severe enough to necessitate amputation, produced no pain, and recently he has had a lacerated wound of another of his fingers, and it was noticeable that should the dressing be adherent he evinced no sign of suffering when it was forcibly pulled off, yet his tactile sensibility is unimpaired.

The radiogram of the shoulder is characterised chiefly in its want of definition as regards the glenoid element—the normal outline being replaced by a dense shadow cast by the altered surface and peri-articular osteophytic growth in that region. At the patient's solicitation an incision was made into the joint capsule and the fluid evacuated. At the same time opportunity was taken to explore the cavity with the finger and ascertain the extent and attachments of the osteophytic growths. The escape of the fluid produced a temporary relief of the distension.

This case presents all the characteristic phenomena of syringomyelia. The arthropathy has a strong resemblance to that found so frequently in locomotor ataxia, but there is no other similarity between these diseases. The spastic paraplegia which is evidence of involvement of the pyramidal tracts is unlike the ataxic gait, and an investigation of the reflexes, which are exaggerated in syringomyelia, clears up the diagnosis. As syringomyelia becomes pronounced spinal deformity is the rule, and the patient becomes bowed with a regular, not angular, kyphosis, to which is superadded scoliosis and rotation. The analgesia and the

thermo-anæsthesia are very striking and in contrast with the retention of the tactile sensation. The patient whose case is described above is distinctly under the average height and development, but the muscular atrophy, which occurs sooner or later in syringomyelia, was not manifest, and to this probably was due the absence of deformity in the hands—the so-called claw-hand or preacher's hand, according to the paralysis of the flexors—though it must be remembered he had had inflammatory affections of the fingers resulting in amputation and scars, and by these perhaps the characteristic pose of the hand and fingers might have been thereby obscured.

Syringomyelia is a chronic though always progressive disease, and is due to alterations in and about the central canal of the spinal cord. Its commencement is insidious and cannot be defined, its ultimate result is always fatal, either directly from the nerve affection or from some intercurrent disease to which the progressive nerve lesion predisposes.

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## RECENT ADVANCES IN MEDICAL SCIENCE.

## MEDICINE.

UNDER THE CHARGE OF

W. T. RITCHIE, M.D., EDWIN MATTHEW, M.D., J. D. COMRIE, M.D.,  
AND A. GOODALL, M.D.

## AUSCULTATORY PERCUSSION OF THE CHEST.

A VARIATION of the usual procedure of auscultation percussion is described by Alexander (*New York Medical Journal*, 30th June 1917). He uses a special stethoscope provided with two diaphragms in the form of a drum composed of hard rubber and parchment. He places the stethoscope over the spinous processes of higher thoracic vertebræ, holding it firmly in place by the tips of the second and third fingers of the left hand. The first and fourth fingers are placed at equal distances from the bell of the stethoscope, at corresponding areas on each side, and are percussed alternately with the right hand. In the event of there being a consolidated area beneath one of the percussed fingers, the note obtained will be of a distinctly higher pitch than that obtained on the opposite side, the volume of sound being also greater when percussion is carried out over consolidated lung. A similar procedure is adopted to percuss the lungs in front, by holding the chest-piece of the stethoscope against the centre of the sternum in front.

## USE OF INEXPENSIVE CARDIAC STIMULANTS.

A series of articles upon the relative cost of various commonly used drugs compared with their effectiveness is contributed by Sajous (*ibid.*, 23rd June 1917 *et seq.*). He points out the relative inexpensiveness, among the cardiovascular stimulants and tonics, of strychnine salts and powdered digitalis leaf compared with the costliness of caffeine and theobromine under present market conditions. This applies to oral use, the hypodermic preparations of digitalis being nearly as dear. Atropine sulphate is about twenty times as expensive as strychnine sulphate. Camphor, which had become very popular recently, injected in olive oil as a stimulant in cases of collapse, has become (dose for dose) eight times more expensive than strychnine since the beginning of the war. Ammonium preparations have changed little in cost with the progress of the war, and carbonate of ammonia dissolved in water in 5-grain doses costs about as much as the

inexpensive strychnine. The aromatic spirit of ammonia, on the other hand, is very expensive, costing about as much, dose for dose, as atropine, on account of the aromatics, and especially of the alcohol, which enter into its composition.

#### RESULTS OF RÖNTGEN-RAY TREATMENT IN MALIGNANT TUMOURS.

The results attained in the treatment of 258 cases of malignant disease by means of "deep" X-ray treatment is recorded by Holding (*Amer. Journ. Med. Sci.*, July 1917). The treatment was carried out by a Coolidge tube, with transformer of 10-inch spark gap passing 7 milliamperes of current through the tube. An aluminium filter was used and the skin dose was carefully measured by tintometer, the time occupied in giving the full dose for each area being three to four minutes. By the "cross-fire" method two to three skin areas were treated at each sitting, and the dosage was never repeated over a given area at intervals of less than two weeks. If a greater number of applications were given at one sitting, nausea and depression were always induced. The best results were obtained in cases of basal-celled epithelioma, the worst in squamous-celled epithelioma; and in all 108 cases were improved, while 150 showed no sign of amelioration. Lymphosarcoma gave the most brilliant primary results, large tumours melting away, with restoration of health and increase in sense of well-being; but all these cases recurred, and the disease then progressed despite all treatment. Cases of carcinoma of the breast, ovary, testis, and lymphatic structures were ameliorated. The post-operative raying and treatment against metastases is a valuable adjunct to surgery, and provides a more uniformly successful method of treatment than any other procedure. Although most of the improved cases ultimately relapsed, their lives were prolonged and made more comfortable by the Röntgen-ray treatment.

#### VISCERAL FINDINGS IN ONE HUNDRED SYPHILITICS.

A careful analysis of the internal lesions found in 100 consecutive cases of syphilis has been made by Howard (*ibid.*). The pupils were unequal in 10 cases, the Argyll Robertson condition being present in 2, both of whom had tabes dorsalis. Thirty of the cases had thyroid glands, which were visible and palpable, and in 6 there was definite evidence of hyperthyroidism. No evidence of syphilis of the lungs was noticed in any of the cases, though 5 had apical tuberculosis. The heart appeared to be a site of predilection for early involvement, and 36 cases showed definite evidence of cardiac abnormalities, several of these, 14 in all, being cases of hypertrophy with arteriosclerosis. Renal complications, as shown by albuminuria, occurred in 2 cases only; and gastric symptoms were present only in 6, of whom half had the crises



of tabes. Visceral syphilis is thus at least as common as, and much more serious than, cutaneous syphilis, and its manifestations are detectable in early stages in a large proportion of cases. Such manifestations are as readily controlled by proper treatment as are the visible signs of the disease. It is important, however, in view of the extreme seriousness of the later stages of visceral syphilis, that the treatment be pushed energetically from the start in order to eradicate the disease while this is possible, and before irremediable damage has been done. Furthermore, it is important that every patient with syphilis be carefully watched for signs of such visceral involvement as should indicate treatment besides the ordinary antisyphilitic measures. For example, a dilating heart in early syphilis indicates rest just as clearly as though it were due to rheumatic carditis, and the neglect of this precaution may leave the patient with a weak heart, even though he be lucky enough to be cured of his syphilis. Cardiac dilatation of several weeks' duration sometimes occurs after the administration of salvarsan.

#### AURICULAR FIBRILLATION.

A study of some clinical considerations in cases showing this feature is made by Levine (*ibid.*). In the majority of cases it can be recognised by auscultation at the apex combined with palpation of the radial pulse. The condition is one in which numerous irregular very rapid impulses are sent out by the auricles, which do not actually contract, but remain twitching in diastole. The ventricles respond to a small portion of the impulses and contract in a grossly irregular fashion both as to rate and strength—the condition known as “delirium cordis.” Accordingly an arrhythmia noted on auscultation at the apex with a pulse over 100, together with a difference between the apex and radial counts, indicates simply that the auricles are fibrillating; if this simple test be applied, in not more than 10 per cent. will the condition be confused with other arrhythmias. From a study of 128 cases diagnosed by electrocardiograms, the writer came to the conclusion that auricular fibrillation is commoner than is supposed, about as many cases being admitted to a general hospital as there were cases of lobar pneumonia. The transient form is very common. About one-third of the persistent cases have had one or more attacks of rheumatic fever or chorea, and show clinical signs of organic mitral endocarditis, and about one-third have escaped all these. Most patients (he finds) with organic mitral disease develop mitral stenosis, and only a small number reach the age of fifty years.

#### THE RATE OF EXCRETION OF URIC ACID, UREA, AND CREATININ IN NEPHRITIS.

The accumulation of the end-products of protein metabolism in conditions of renal insufficiency is now well established as a fact, owing

to lowering of the permeability of the kidney. Uric acid is the least readily eliminated, and creatinin the most easily, with urea occupying an intermediate position. Wantabe found, therefore, in a study of 25 cases (*ibid.*) that with a lowering in the activity of the kidney the uric acid is apparently the first to suffer, although in advanced stages of nephritis the ratio between the urea of the blood and that of the urine may be even higher than the ratio in the case of the uric acid. In these severe cases creatinin would quite uniformly seem to be the last to be markedly influenced.

#### CHLORIDE EXCRETORY FUNCTION.

A clinical study of chloride excretory function is made by Wolferth (*ibid.*) under new methods. The usual manner of studying the power of the kidneys to excrete chlorides, and thus to obtain a measure of renal efficiency, has been to add a large quantity of sodium chloride to the patient's diet, and then to estimate the power of his kidneys to get rid of the excess. This observer, however, uses a method devised by M'Lean, which is not dependent upon any diet and requires only two analyses; it does not even necessitate the patient's admission to hospital. The patient is given 180 c.c. of water to drink, and following thereon a collection of seventy-two minutes' urine is made. The chloride content of the urine is estimated by Volhard's method. About the middle of this period blood is withdrawn, shaken up with a few crystals of potassium oxalate to prevent clotting, centrifuged, and the chloride of the plasma estimated. The normal plasma content at which excretion of chloride begins is 5.62 grms. per litre; this is known as the "plasma threshold." The "threshold" in the case under investigation is calculated from the chloride content of the plasma and urine by a formula similar to that of Ambard. Studies of the chloride excretory function by these means were made in 21 cases of nephritis, 7 cases of eclampsia, and 2 cases of mercuric chloride poisoning, with the following results:—An elevated plasma chloride threshold is valuable evidence of the presence of nephritis, and this function is impaired in nearly all cases of nephritis. The chloride excretory function is much more disturbed in eclampsia than is the urea excretory function.

#### X-RAYS IN EXOPHTHALMIC GOITRE.

Many patients with so-called "shell-shock" and "soldier's heart" are, as Hernaman Johnson (*Practitioner*, July 1917) points out, really suffering from hyperthyroidism. When there is reasonable ground to believe that the thyroid is overactive, it should be treated by X-rays. Some cases do well, yet he admits the results are not so good as in civil practice, owing to a subconscious mental factor. He considers

that the X-rays are a specific, in the sense that the secretion of the thyroid may be diminished to any required degree. When the secretion is seriously vitiated in quality, suppression may have to be carried so far that subsequent permanent thyroid feeding is necessary. Cure cannot be effected in the presence of any persistent irritation, mental or physical, and reduced activity on the part of other ductless glands may be a factor in delaying cure.

J. D. C.

## SURGERY.

UNDER THE CHARGE OF

J. W. STRUTHERS, F.R.C.S., D. P. D. WILKIE, F.R.C.S.  
AND JAMES M. GRAHAM, F.R.C.S.

### ACUTE PANCREATITIS.

It has been generally recognised that pancreatitis is in most cases due to infection spread from an adjacent focus, and particularly from the biliary tract. It has usually been supposed that the infection spreads directly along the pancreatic ducts from the biliary ducts; but, according to Deaver (*Journ. Amer. Med. Assoc.*, 11th August 1917), recent work suggests that, while this method of infection may sometimes occur, it is more usual for the infection to extend by way of the lymphatics, which form a rich network in the retro-peritoneal tissues about the pancreas. As the gall-bladder is the upper abdominal organ most commonly affected by chronic infection, it is natural that pancreatic inflammation should be secondary to that focus. There is clinical evidence to show that pancreatitis may similarly result from an ulcer of the duodenum, particularly of the second part, and probably also from colitis, infection passing through the medium of the lymphatics in the transverse mesocolon to the pancreas situated immediately below its attachment. Deaver further believes that occasionally infection may spread to the pancreas by the retro-peritoneal lymphatics from a focus in the appendix or pelvic organs. Although there is little evidence, it is likely that in some cases pancreatitis is due to a systemic blood infection.

The occurrence of fat necrosis has been explained satisfactorily as due to the liberation of fat-splitting ferment, but the action of trypsin, which must be diffused at the same time, has been overlooked till recently. Possibly the hæmorrhage which occurs in some cases of pancreatitis is due to the digestive action of trypsin on the vessel wall. Pure pancreatic juice, as obtained from the ducts of the gland, will not digest protein, as it requires for activation some substance or substances which will convert its latent properties into active energy. Normally this is



supplied by the enterokinase of the duodenum, but experimental activation may be produced by the action of calcium salts, by the products of aseptic necrosis of tissues, and by certain bacteria. It is possible, therefore, for inactivated pancreatic juice to be extravasated into the tissues without causing damage. If, however, the conditions are such that the trypsin is activated, its digestive action follows, tissue cells are destroyed, and the result is acute hæmorrhagic pancreatitis, if delicate vessel walls are affected. Whipple and others have shown that, in acute intestinal obstruction, a powerful toxin is produced, which proves fatal in small doses and has the characters of a primary proteose, such as is formed by the action of trypsin on protein. The close resemblance between the toxæmia of acute pancreatitis and that of high intestinal obstruction suggests that the toxæmia in both conditions is either similar or closely related, and due to the toxic derivations of tryptic action on protein materials.

Cases of acute pancreatitis may be classified clinically as ultra acute, acute, and subacute. The ultra-acute variety is characterised by sudden onset of symptoms, with pain, shock, and continued vomiting. In this variety hæmorrhage is profuse and the pancreas is found hugely swollen and in a condition of more or less advanced necrosis and gangrene. In the acute variety the onset is also sudden, but the symptoms are less severe, and the rallying power of the patient is more in evidence. Pancreatic hæmorrhage is a feature, but the organ shows less swelling, and may have escaped this process in part; if the early toxæmia is not fatal, general improvement occurs, and it will be found that a portion of the organ has remained unaffected. The most affected part undergoes necrosis and gangrene, and suppuration generally ensues. In rare cases pyogenic infection does not follow, and recovery takes place with the formation of an aseptic hæmorrhagic cyst, but, as a rule, sepsis supervenes, and, unless relieved, leads later to the death of the patient.

Subacute pancreatitis is usually limited to the head of the organ, which becomes swollen and tender but not often palpable. The symptoms, usually erroneously attributed to gastritis, gall-stones, ulcer, or indigestion, are pains in the upper part of the abdomen, nausea, and often vomiting. The pulse and temperature are little affected, unless complicating inflammation of the organ is present. Occasionally an interstitial hæmorrhage of small extent is present. Cholecystitis frequently accompanies, and may initiate, the condition. A history of several attacks is often given, and such slight attacks of pancreatitis not rarely precede the acute, or ultra-acute, forms of inflammation.

In the acute and ultra-acute varieties immediate operation should be undertaken, the steps of which will vary with the conditions found. The chief object is to provide early and immediate drainage. The most satisfactory access is by an anterior incision. The pancreas should be freely incised in a longitudinal direction or numerous blunt punctures



made in its substance, exposure being obtained through the gastro-hepatic or gastro-colic omentum, depending on whether the stomach is high or low. Both gauze and tube drainage should be laid down to the organ and conducted to the surface through an enveloping sheet of rubber dam to minimise adhesions.

Operation should be delayed in cases of collapse till there is some reaction to stimulation with saline infusions, and also in cases when the patient is already obviously improving from the effects of the disease. In a series of thirteen cases operated on by Deaver there were three deaths. In most of the cases the gall-bladder was opened and drained after removal of stones. One of the fatal cases was of the ultra-acute type and hopeless from the beginning. In the other two fatal cases the pancreas was not incised and the gall-bladder alone was drained. Deaver now believes that if the pancreas had been incised in these cases the patient would most likely have recovered. Five cases treated by incision and drainage of the pancreas, in addition to cholecystostomy in four of the cases, all recovered. The main object of the operation in acute cases is the drainage of the pancreas, and in this conclusion Deaver agrees with Körte, who has had a large experience in dealing with such cases. The advisability of dealing with the gall-bladder in the presence of stones or inflammation will depend on the condition of the patient. When there is an ample margin of safety it is advisable to empty and drain the gall-bladder and the common duct if necessary.

#### CHRONIC DUODENAL DILATATION IN VISCEROPTOSIS.

According to Vanderhoof (*Journ. Amer. Med. Assoc.*, 18th August 1917) the transverse part of the duodenum is liable to be compressed by the mesentery and its contained superior mesenteric vessels, and particularly by the assumption of the erect posture. In 1899 Albrecht showed that this segment of the duodenum has normally a flattened contour. This normal constriction of the duodenum may readily be increased by slight anatomic variations or by pathological conditions up to the point of complete occlusion. Gentle traction downward on the mesentery increases the constriction, and it is obvious that, when the pressure on the duodenum becomes greater than the muscular contractions of the duodenum can overcome, symptoms will be produced. Albrecht and Connor have shown in the cadaver that traction on the mesentery in the direction of the axis of the pelvis may produce an obstruction in the duodenum which is impervious to water.

In visceroptosis conditions may arise which reproduce this experimentally produced constriction. When the small intestine lies chiefly or altogether in the pelvis there is a drag on the mesentery in just the direction needed to cause a more or less complete occlusion of the

duodenum. When the mesentery is particularly long the intestine is likely to be supported by the pelvic floor, and there is not the same risk of injurious traction. The duodenum is more liable to be seriously compressed if there is any unusual prominence of the lumbar vertebræ. A dilated cæcum displaced in the pelvis was noted in five cases of duodenal dilatation reported by Bloodgood. Jordan associates duodenal dilatation with ileal stasis, the effect of which is to displace the distended lower coils of the ileum into the pelvis, and thus to drag upon the mesentery, producing a kink at the duodeno-jejunal junction.

The symptoms of chronic dilatation of the duodenum may be grouped as follows:—

1. Persistent or recurring vomiting. The vomitus generally contains bile, often in considerable amount.
2. Pain in the upper part of the abdomen, generally referred to the right hypochondrium, and of an aching or dragging character; but it may simulate the pain of peptic ulcer or biliary colic.
3. Prominence of the lower abdomen due to enteroptosis, often with a degree of lordosis.
4. Obstinate constipation is the rule, although there are exceptions.
5. Vague toxic symptoms are common. Headache and nervousness are frequently complained of. In marked cases starvation and acidosis develop and may lead to a fatal termination.

The diagnosis is often confused with other pathological conditions, or the symptoms may be ascribed to hysteria. The author regards chronic dilatation of the duodenum as a clinical entity, and states that the diagnosis of the condition can be confirmed by a competent X-ray examination.

The treatment may be either medical or surgical, depending on the degree of obstruction. In the simpler cases a cure may be obtained by keeping the patient at rest and by a diet which will increase the weight and the amount of fat in the supporting tissues of the abdominal cavity. In more obstinate cases postural treatment has been successful. It is recommended that the patient should assume the knee-chest position for fifteen minutes every two hours, and in the intervals should lie prone. If vomiting is arrested by this alteration of position the pleasanter left-sided position may be substituted, with the hips elevated. This treatment may be supplemented by lavage of the stomach.

For severer cases medical measures are of little avail, but it must be admitted that so far no standard operation suitable for all cases has been evolved. Some operators have succeeded in widening the slit in the mesentery. In some cases duodeno-jejunostomy has been successful; in other cases relief has followed resection of the right half of the colon with ileo-colostomy. With few exceptions the operation of gastro-enterostomy has been a failure.

J. M. G.

# INFECTIOUS DISEASES.

UNDER THE CHARGE OF

CLAUDE B. KER, M.D.

## ABORTIVE TREATMENT OF ENTERIC FEVER.

MAUTÉ (*Presse Médicale*, 21st June 1917) draws attention to the present state of our knowledge of vaccine therapy in enteric fever. He very justly observes that while results have been obtained by the subcutaneous injection of typhoid vaccines which have been claimed as, on the whole, favourable, yet we look in vain in the literature for such a definite and constant modification of the course of the illness, following a subcutaneous inoculation, as would justify the conclusion that the improvement is actually the effect of the treatment.

If, however, the dose of vaccine is given intravenously, much more definite results are obtained, as is attested by all the writers who have made use of this method of injection. In 50 per cent. of the cases complete apyrexia, with a concomitant amelioration of all the symptoms, rapidly follows the first or second injection, and in another 25 per cent. defervescence by lysis and general improvement occur. Unfortunately, however, the immediate effect of the intravenous injection is a very severe reaction, with very high temperature, vomiting, diarrhoea, delirium, and a tendency to collapse. Mauté himself, after treating three patients by this method, abandoned it, on the ground that the margin between the therapeutic and toxic doses of a vaccine administered intravenously is too narrow. Too small a dose has no therapeutic effect. If, on the other hand, the correct dose is exceeded, the results may be serious, and, moreover, toxic reactions vary very much with the individual patient.

The rapid improvement observed in so many cases would naturally lead to the conclusion that the treatment is at least specific. But the observations of Ichikawa, Kraus, and others contradict such an assumption, for the first-named observer obtained equally good results in cases of paratyphoid fever, although the vaccine employed was typhoid, and the second secured identical reactions in typhoid fever with a vaccine of the bacillus coli. Mauté suggests, then, that the benefit of all vaccine therapy in enteric fever is possibly the result of non-specific humoral modifications, called into existence by the introduction of different proteins. Following up this theory he set himself to discover some means of obtaining this beneficial reaction of the tissues with the minimum of secondary toxic accidents. He ultimately prepared a bacterial emulsion from a saprophytic micro-organism found in spring water in the neighbourhood of Fez, where he works. The organism is motile, Gram-negative, and does not liquefy gelatine. It has no patho-



genic effect on laboratory animals. Mauté is unaware if it has been previously identified. In any case, as the action is not specific, the matter is of no great importance, as other saprophytes could be employed equally well.

Twenty-three cases of enteric fever, of which one was paratyphoid, were treated with intravenous injections of this emulsion, which was sterilised by the addition of a little phenol. The dose employed varied from 100 to 500 millions. In spite of the fact that the fever, as met with in Morocco, is very severe, there was only one death in the series, and that occurred in a patient admitted with suppurative peritonitis following cholecystitis. In nineteen cases a rapid fall of temperature to normal followed the first injection, and in twelve of these there was no further pyrexia. In others the fever appeared to resume its course at a lower level, until a second injection secured a definite apyrexia. In all cases apparently the general symptoms improved even more strikingly than did the temperature. The only condition which persisted, if it had been previously present, was the diarrhoea. No relapses were observed, and the only complication noted was one slight attack of phlebitis.

The immediate effect of the injections was a rigor of short duration and a rise in temperature, reaching its maximum in about three hours. In no case was there any disquieting symptom, and Mauté claims that his method has no risks. He observes that the reaction cannot be explained by hyperleucocytosis, and he is doubtful if the micro-organisms merely act as foreign protein. He inclines to the belief that the explanation lies in the reaction of non-specific blood ferments liberated from their normal equilibrium by the action of the illness. Mauté's paper raises many interesting points, and certainly casts grave doubts on the specificity of vaccine therapy.

#### EPIDEMIC POLIOMYELITIS.

Noguchi and Kudo (*Journal of Experimental Medicine*, 1st July 1917) have investigated the theory of the transmission of this disease by insects, and, so far as mosquitoes and flies are concerned, have obtained negative results. Mosquitoes were fed on inoculated monkeys and then allowed to bite other monkeys, the resistance of whose meninges had been lowered by the intrathecal injection of normal horse serum. Although the mosquitoes in considerable numbers attacked the prepared animals, no transmission of the disease resulted. Brain and cord emulsions or their filtrates, derived from two monkeys which died of experimental poliomyelitis, were added to jars of stagnant water containing mosquito larvæ of various ages, and kept at a suitable temperature. The hatched-out mosquitoes in great numbers were put in a cage with two monkeys, and a large proportion of them were engorged



with blood by the following morning. No transmission followed, and a similar negative result was obtained in an experiment with the offspring of the presumably infected mosquitoes. Experiments were also made with non-biting flies, with a view to ascertaining if the virus can penetrate into the interior of the fly larvæ when the latter are fed on poliomyelitic material, the larvæ of the house-fly and the blue-bottle fly being used. The infected pupæ and imagos were ground up into an emulsion with saline solution, and a monkey was inoculated intracerebrally with a filtrate without result.

These experiments do not, therefore, afford any support to the widely held theory that this obscure disease is transmitted by flies, and although the stable fly was not used in this research it will be remembered that experimental proof of its responsibility for poliomyelitis has not been convincing. The fly theory chiefly rests on the fact that the disease disappears rapidly with the advent of cold weather, and that its curious and irregular dissemination suggests the agency of some kind of carrier.

Conway (*New York State Journal of Medicine*, June 1917) suggests that cat fleas may prove to be the agents of transmission. The life-history of this variety of flea is said to coincide almost exactly with the curve of the greatest prevalence of poliomyelitis. In many instances the patients who formed the group of cases reported by this observer in Ithaca and the neighbourhood had been playing with cats or kittens. Conway believes that the human carrier also plays a part in dissemination, but observes that, if we assume such a means of carriage to be the only one, we have no explanation for the seasonal prevalence of the disease. He considers that children's institutions have been proved to be remarkably free from outbreaks of poliomyelitis, and cats are not likely to be encouraged in such places. Again, he thinks that the comparative frequency of the illness in country as against town districts may be accounted for by the fact that cats are not so generally kept in the latter. Even those who are not prepared to follow him in these deductions will find much of interest in his paper on the epidemiology of the disease.

Nicoll, in the same journal, which has collected several papers on this subject, gives a most interesting account of the remarkable epidemic in New York State in 1916. From June to December there occurred over 13,000 cases and 3300 deaths. Originating in Brooklyn, the infection spread apparently by the routes of travel, notably along the suburban lines out of New York City. The high mortality—25 per cent.—is unprecedented. The rural districts which were affected had a much higher proportion of the population attacked than had the urban areas, but, on the other hand, their fatality rate was appreciably lower. The number of deaths among males was 50 per cent. higher than among females. Not only were boys more likely to be attacked but

also the disease was somewhat more fatal in the male. A curious difference in age incidence was noted between the town and country districts. In New York 97 per cent. of the deaths occurred in persons under fifteen, whereas in the rural sections only 80 per cent. of the deaths occurred under that age. Nicoll states that the Board of Health has been able to obtain fairly conclusive proof that contact is the immediate factor in the spread of an epidemic. The incubation period apparently varies from four to fourteen days, with an average of about a week. The patients were found to be sources of active infection for a period at least eight days after the onset of the disease. In a number of cases the infection was transmitted as early as two days before the frank onset of poliomyelitis symptoms, which suggests an infectious prodromal stage. There was little evidence, however, of the disease being contracted from a person who had been ill longer than two weeks, which may therefore be held to be the limit of the necessary period of isolation to be required for suspected cases of poliomyelitis in future epidemics.

The same number of the journal has an article by Taylor, who treated nineteen cases, two of which terminated fatally, with intrathecal injections of immune serum obtained from persons who had had the disease in 1914 and 1915 and were otherwise healthy. In every patient who received the injection during the febrile stage there was a definite reaction of temperature, sometimes as much as two or three degrees. This reaction, however, was not observed in patients with a normal temperature and definite paralysis. Taylor concludes that the course of the disease is favourably influenced by this treatment, that the serum can be administered safely, and should be given both intraspinaly and intravenously. Administration after the acute febrile stage is over is useless.

Other papers of interest are by Whitman, who chiefly concerns himself with the after-care of paralysed cases, and describes what is being done in New York State by special visitors and nurses, and by Bowen, who discusses the question of diagnosis of unparalysed patients. Much help can be obtained from lumbar puncture in the early stage before paralysis develops. The fluid is clear, with increased albumin and marked globulin reactions. The cells are increased in number; polymorphs predominate at first, but afterwards a very definite lymphocytosis of 90 per cent. occurs.

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## DERMATOLOGY.

By F. GARDINER, M.D., F.R.C.S.

## SCABIES AND OTHER SKIN DISEASES IN THE ARMY.

THE extent and spread of scabies infection is now only being fully realised in the Army, and the consequent outbreak amongst the civilian population, almost equally disastrous, will have to be tackled in a serious manner.

In a recent discussion (*Proc. Roy. Soc. of Med.*, July 1917) Macormac recommends—what has been obvious to dermatologists—the provision of a scabies station for each Army corps. The reasons he advances are, that it would ultimately mean a saving of the personnel of the Army and would shorten treatment. He implies also that expert knowledge is required, and this seems even a stronger point. “I suppose hardly any battalion is completely free from itch. Regular medical inspection is necessary and often most difficult to arrange. Since scabies in France differs in some important features from the form seen in civil life, medical officers must know what to look for; the hands are often entirely free from lesions, while interdigital burrows, that pathognomonic sign, are present only in about 13 per cent.” Vaccines given for six months, opium given to relieve the itching, and solid silver nitrate used to burn out the lesions are noted by him as results of faulty diagnosis.

We agree with his remark that text-book descriptions are misleading when applied to the form now prevalent.

In a subsequent article, written in collaboration with Small (*Brit. Med. Journ.*, 22nd September 1917), he points out the sites of election as being the wrists, hands, penis, lower abdomen, anterior axillary borders, elbows and buttocks; that a correct diagnosis can only be made after inspection of the whole body; that involvement of the penis occurs in the majority; and that the concomitant coccal infection may be so severe as to mask the disease.

In our experience of cases returned to this country the points of greatest interest are the latency of the eruption, which often becomes more severe in a devitalised patient recovering from a wound or illness; that burrows are almost invariably absent; that the diagnosis can be made by distribution alone, and that this is most commonly the buttocks, genitals, and lower limbs; and that treatment must be much more thorough and prolonged than in types formerly seen.

Many cases are also seen in which itching is not complained of, and these, along with the partially cured individual, are what Macormac calls the scabies “carrier.”

Most striking is his analysis of 1000 cases diagnosed as scabies, boils, and impetigo—“diseases that are responsible for by far the



greater number of admissions. Of these, 65·9 per cent. can be directly attributed to scabies."

The treatment of itch in the Army is, as in civil life, a matter of dispute, and many of the so-called cures only mask the symptoms. Most reliable authorities agree with Macormac that the older method is still the best. He gives a hot bath with soap and thorough scrubbing of all the burrows with a nail-brush; sulphur ointment is then rubbed thoroughly without bathing for three days, and at the end of this period another bath is given, and then fresh clean clothing is put on. Rigid disinfection of every article of the kit and a conscientious supervision by the medical officer or a skilled orderly are absolute essentials of success. "Where pyodermic complications are so common, care must be taken to prevent cross-infection. Each man should have a separate pot of ointment." In his later article the statement is made that complicated cases take ten times longer to cure, and incidentally we may remark that these are mainly the type that come to this country. Of great value are his suggestions that regular inspection should be made for carriers, that infected men and horses should be promptly treated, and that blankets, being the chief source of infection, should be sterilised as often as possible.

Lieutenant-Colonel Bruce (*Proc. Roy. Soc. of Med.*, May 1917) records excellent results by means of sulphur fumigation—a process commenced owing to the rush of cases in June 1915. The patient is given a hot bath, allowed to soak for at least five minutes, and then well lathered with soap and the burrows scrubbed. He is then placed in a cabinet of 78 cubic feet capacity, with his head outside; inside the cabinet a sulphur candle is burnt and also some steam introduced, and he remains there for forty or fifty minutes. Meantime his clothing and kit are disinfected by steam, and at the end of the time he puts on warm clean underclothing. Again, most careful supervision is a *sine qua non*. He obtains his best results in recent cases with little induration, only one application being necessary; but in old-standing cases he repeats the process in forty-eight hours. Two hundred cases with only 2 per cent. of returns are recorded, and these failures he attributes to some article of clothing having escaped disinfection.

In the subsequent discussion opinions were often adverse. Macormac is very definite—"treatment by means of sulphur vapour is a method harmful often to the patient and at all times dangerous to the community, in that it manufactures a class of scabies 'carrier.' In the interests of the Army it should be discontinued."

Our experience is at one with this, and while simple cases in the early stage may be cured, we cannot see how the vapour can reach the ova deep in the burrows unless these are dissected up to the end.

This evidently was in the mind of subsequent speakers, who laid emphasis on the value of previous scrubbing. Even in the Army it is



impossible, because it is too painful to tear open every burrow with a nail-brush, and in the chronic indurated cases with a fibrous skin the permeation of the vapour is physically unobtainable.

Macormac, in a further extension of his paper, deals with other skin diseases in the Army.

Impetigo is easily first in the statistical list, then follows scabies, then boils, dermatitis, seborrhœa, psoriasis. The impetigo is rather of the ecthyma order, and it has been much seen in return cases in this country; in fact we are accustomed to call it Army ecthyma. It involves mostly the lower limbs and buttocks, and the ulcers are very deep, chronic, and leave a pigmentation and scarring practically identical with syphilis. From the lesions Captain Henry isolated the *streptococcus faecalis*.

The duration of cure is often as long as two or three months. The soldiers, he states, are familiar with it and spread it by scratching, but a linear type is often noticed in which malingering can be excluded. Vaccines have not proved satisfactory in Macormac's hands, and he finds painting with a 3 per cent. silver nitrate in lotion as almost specific.

Seborrhœa has also given much trouble, and yields better to calamine liniment than anything else. In the subsequent discussion Sequeira testified to the value of this liniment after fomentation and removal of crusts. Other speakers also emphasised the wide spread of ringworm of the groin—there is no doubt there is much of it, especially amongst officers, and too often the affection between the toes is neglected.

All speakers agreed that the skin conditions in the Army are extremely rebellious, and that is the experience generally in this country.

Devitalisation of the individual as a whole, the environment of dust, dirt, and pediculosis, and the lack of facilities for cleansing, acting on a race of individuals accustomed to the conveniences of civilisation, will explain much, if not all.

#### X-RAY TREATMENT OF SKIN DISEASES.

This form of treatment has survived the boom of an irresponsible enthusiasm, has lived through the aftermath of consequent disrepute, and is now reaching the haven of sound common sense, based on reliable experience of years. The three following papers are therefore of interest.

Brocq (*Ann. de dermat. et de syphil.*, January 1917), who has done a large amount of work in this direction, is now very guarded in his methods. In 1904, when he recorded many successes, he also issued a warning against regrettable results arising from careless technique.

While in his opinion nothing can take the place of this agent in certain conditions, he fears that these accidents may throw the whole into disrepute, and in his paper he endeavours to demonstrate to medical men the indications for and the numerous contra-indications to their use. It must be constantly remembered that radio-dermatitis may occur years later, and even although these accidents have occurred under the care of experts, they can now be avoided by the use of aluminium filters, by the giving of large doses infrequently, and, above all, by the correct diagnosis and choice of cases.

Scalp ringworm, he hopes, may ultimately be treated by segregation of the individuals affected, in conjunction with clipping the hair, washing, and iodine treatment. The X-ray results are good, although the risk is too great in the case of a disease which ultimately dies out, but if used, a first-class apparatus and expert workers are essential. For favus he asserts that X-rays are still the best method, as in any event baldness will ensue, but that owing to the depth the depilation has to be done twice, with careful epilation by forceps after this if necessary. In alopecia the method has no scientific basis. To use a means of producing atrophy in a disease which does the same is almost contradictory, but as some cures have been obtained, it may still be tried in the type which lasts for years and resists all other remedies. Our opinion is entirely opposed to their use here, and we consider the recorded successes should be viewed with suspicion, especially as the hair may recover naturally when untreated.

It is interesting to find that his list of lupus vulgaris in private is like that of many other dermatologists—now very small. The explanation is, that the cases are now taken early and yield to caustics. In hospital X-rays are still used, as they are painless in their results, and, in great part because of this, still popular; but even there he only uses them in fungating types affecting the nose and lips and gives merely a few sittings at long intervals.

In lupus erythematosus, because of the atrophy, and in eczema, because there is a general condition, he is averse to their use.

We must join issue with him as regards warts. He has evidently been frightened off by accidents, and deduces, wrongly we believe, the conclusion that the surrounding skin is very susceptible. In widespread warts on the hands and face we know of no remedy comparable.

Pruritus, according to Brocq, is a disease due to internal causes, and he tells a pitiful tale of pruritus vulvæ in a lady who was treated by X-rays against his advice. Cure of the symptoms followed; recurrence took place; was again X-rayed, and this went on till a severe chronic ulcer developed. That, to our mind, is a reflexion on the medical man—not the method. With the X-rays sleep can be ensured at nights, and then we can go on with other methods which will relieve the local congestion and remove the thickened skin.

Psoriasis, we agree, is best left alone, unless where there are only one or two chronic thickened patches; it, again, is a systemic disease.

Mycosis fungoides, first treated by X-rays in Edinburgh, is still regarded as yielding only to this agent, but even in this disease radio-dermatitis must be watched for.

Brocq concludes that X-rays must be employed with respect, mingled with a healthy fear, and all known safeguards and precautions must be taken.

Dubreuilh, in the March number of the same journal, goes further, and insists that the radiologist should also be an expert clinical dermatologist. He quotes the remark of a radiologist that there is no affection of the skin but can be treated by X-rays, and maintains that X-rays are only valuable in a small number of skin conditions and contra-indicated in a large number. Like Brocq, he emphasises the view now generally held, that massive infrequent doses are best, as multiplied sésances increase the likelihood of error and cause irritation. For example, he gives 10 Holtzknecht units to acne keloid, 10 to 12 H. to senile keratoma, and 20 to 25 H. to epithelioma.

Augustus Simpson (*Amer. Journ. of Cut. Dis.*, April 1917) recommends the use of ordinary remedies first; when these fail it should be remembered, when X-rays are used, that different lesions and different localities have varied susceptibilities. In all cases he also insists on the administration of large doses at long intervals. He divides the conditions curiously into three classes, which, we agree with him, will not escape criticism:—

- 1st. Lichen, psoriasis, eczema, pruritus, and dermat. herpetiformis, in which the quantity and quality of the rays is not so all-important, but in which the line of safety should be taken.
- 2nd. Favus, ringworm, hyperidrosis, bromidrosis, hypertrichosis, chronic rebellious acne, acne keloid, keloid, and chronic eczema, in which there must be great watchfulness, as the margin of danger is very small.
- 3rd. Malignant growths, requiring very large doses.

All three writers voice the views held by reliable authorities—that X-rays still require more accurate methods of measurement; that the experience of a skilled operator is therefore an urgent necessity; that the use of frequent applications is culpable; and the French writers are, in our opinion, correct in excluding diseases due to internal causation.



## NEW BOOKS.

*War-Shock. The Psycho-Neuroses in War—Psychology and Treatment.* By M. D. EDER. London: William Heinemann. 1917. Price 5s. net.

THIS book is an interesting product of a conflict between Freudian principles and the needs of military service. Dr. Eder is a keen disciple of Freud and apparently a thorough-going believer in his psychology, but, faced by the exigencies of military service, he was only able in a few cases to put his principles into practice, and with the remainder was content to obtain the striking immediate results which follow hypnotism. The book is a record of the treatment of 97 cases, of which 79 were treated by hypnotism and another 11 by suggestion, with or without the use of anæsthetics.

The cases belonged in the main to that class of war-neurosis which shows itself in paralyses, contractures, tics, and sensory symptoms. According to the views of the Freudian school which have hitherto prevailed, these conditions are just those which are especially to be ascribed to the working of bodies of repressed and unconscious experience. It is well known that the whole Freudian doctrine started from a revolt against hypnotic treatment because this treatment ignored the conditions which were believed to form the basis of the morbid state. In employing hypnotism Dr. Eder is either treating symptoms which he believes to depend upon deeper underlying conditions, or he is throwing over the teaching of his master; but he gives us little indication of his state of mind in this respect. In some cases he was able to employ suggestions based on the results of a psychological examination, but since the hypnotism was usually employed after one such examination, it is evident that this can have been no real "psycho-analysis," as understood by Freud.

The point is of especial importance in relation to the treatment of the neuroses and psychoses arising out of the war. Dr. Eder's patients were soldiers who had been thrown out of activity by some shock or strain. If Dr. Eder believed that their paralyses, tics, or sensory defects were due to the activity of complexes which were certainly not removed by the hypnotism, he was only sending these men back to meet anew shocks and strains similar to those which had already had such disastrous effects. The thorough-going advocate of hypnotism would have given his patients definite suggestions to enable them to withstand the effects of shell-fire or other incidents of warfare, but no one who understands hypnotism would expect such suggestion to have any chance of success except with an amount of hypnotic treatment



far greater than that necessary for the removal of symptoms. Dr. Eder does not appear to have attempted any such form of suggestion. Even if he had done so, he would still have been ignoring the interesting problem whether such suggestion would be able to counteract the activity of the still undiscovered complexes which, if he be a consistent Freudian, he must believe to have formed the essential basis of the morbid states with which he was dealing.

There is some reason to believe that the therapeutic success of Freud and his disciples is largely due to suggestion. Their whole mode of procedure might have been devised by a skilful believer in the importance of unconscious suggestion. From the beginning the patient is inoculated with the idea that when his unconscious and forgotten experience has been discovered he will get well, and when, as seems so often to happen with the orthodox Freudians, the process of psycho-analysis is carried on for months or years, we have a long-continued process in which the utmost scope is provided for the play of suggestion. It would be interesting to know whether the success of hypnotism and suggestion applied avowedly and wittingly by Dr. Eder does or does not lead him to subscribe to this view.

Perhaps the greatest value of this book is that it brings prominently before us the need for a thorough investigation of the after-history of the soldiers who are now being subjected to so many different forms of treatment, often based on principles diametrically opposed to one another. Dr. Eder claims over 90 per cent. of cures of "war-shock" by hypnotism and suggestion. To give the claim any value we should know the number of these patients who returned to warfare and the proportion of those who were able to withstand its shocks and strains. Without this knowledge—and Dr. Eder says definitely that except in a few cases he knows nothing of the after-history of his patients—these "cures" may have been a source of definite military weakness, in that he sent back to the Army, apparently well and healthy, a number of soldiers who had already been shown by experience to be especially liable to morbid states which would produce military disorganisation.

The war has now lasted long enough to allow the results of different forms of treatment to be investigated. Only when this work has been carried out shall we learn the real value of Dr. Eder's claim.

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*The Internal Secretions—their Physiology and Application to Pathology.*

By Professor E. GLEY of Paris. Translated and Edited by Professor MAURICE FISHER of New York University. Pp. 241.  
New York: Paul B. Hoeber. 1917. Price 8s. 4d.

PROFESSOR GLEY'S study treats the subject in a thoroughly scientific and critical manner, pointing out what we know regarding the internal secretions, but also indicating the very considerable gaps in our present

knowledge. The translation appears to have been well done. The book begins with a concise history of the subject, from which we learn that for the early work on the endocrine glands we are mainly indebted to the French observers—Claude Bernard and Brown-Séquard. In the two remaining chapters Gley critically examines the main facts on which the doctrine of internal secretion is based. He shows that the mucous membrane of the intestines and the cells of the choroid plexus are to be regarded as endocrine glands, but admits that our knowledge of the chemical properties of all internal secretions is very limited. The essential proof of an internal secretion is the demonstration of the physiological properties of a specific glandular product transferred in a more or less durable form to the blood. Gley is rather against the method of making progress in our knowledge of the ductless gland by the administration of extracts, as this method, while not absolutely defective, is incomplete and therefore inadequate. From the action of an organic extract we have no right to draw conclusions as to its internal secretion without further investigation. (The discovery of a specific product in the venous blood from a ductless gland is of much greater importance.) Organic extracts, even though carefully preserved and dried, quickly lose their properties, and may prove untrustworthy as therapeutic agents. The exclusive use of this method, *i.e.* the administration of extracts, has led to many unjustified conclusions. While the book gives an excellent general view of the subject, it does not take up the various glands *seriatim* and lay before us the present state of our knowledge regarding each, though valuable tables will be found on pages 172-4. On the whole, it must be confessed that the work is better suited for the physiologist than for the practitioner. "The problem is complex. Physiology has furnished the foundations and traced its limits; the solution will be the result of extensive analysis, in which physiology will play its part, but which will no less result from the convergent efforts of clinical science, experimental pathology, and chemistry."

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*Syphilis.* By LOYD THOMPSON. Pp. 415. With 84 Illustrations. Philadelphia and New York: Lea & Febiger. 1916. Price \$4.25.

THE author has succeeded in writing a text-book on syphilis, which represents very fairly the present state of knowledge of the subject. The results of considerable personal experience and of a wide acquaintance with the history and literature of the subject are happily combined. An interesting account is given of the early history of the disease as well as of the recent advances, dating from the experimental work of Metchnikoff and Roux, and the discovery of the *treponema pallidum* by Schaudinn. Special stress has rightly

been laid on the diagnosis and treatment of syphilis, and the modern methods of serum diagnosis and of treatment by the newer preparations are adequately described. The clinical features of syphilis, in its many forms and different stages, are amply discussed and well illustrated by numerous photographs. Chapters on hereditary syphilis and on regional syphilis are also included, and the question of prevention and prophylaxis is discussed, both as regards public measures and from the individual point of view.

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*Elements of Hygiene and Public Health: A Text-Book for Students and Practitioners of Medicine.* By CHARLES PORTER, M.D., B.Sc., M.R.C.P.E., Barrister-at-Law. Pp. xiv. + 384. With 98 Illustrations. London: Henry Frowde and Hodder & Stoughton. 1917. Price 12s. 6d. net.

FOR many years in succession there was an annual output of text-books on hygiene and public health, but for the past few years no work devoted entirely to this branch of medicine has appeared. Dr. Charles Porter has now, however, broken the silence. He has issued a volume which he calls *Elements of Hygiene and Public Health*, and he yet further describes it as a text-book for students and practitioners of medicine. To fulfil the latter requirements one would think that it ought to deal more fully than merely with the elements of the science. Nor is one's belief misplaced, for a perusal of the work soon reveals that much more is included than mere elements.

It is a very difficult matter to write a new work on public health which does not contain much that has been fully treated of already in similar works. Indeed, we only know of one work (and that an American one) which treats the subject in an entirely new manner. If Dr. Porter has not been able to introduce much fresh matter, he has written a work which is eminently readable, and which will afford much valuable information and advice to the practitioner. Dr. Porter asks the latter that, while thinking no less of the treatment of disease, he will consider also the causation of disease, and the influence of surroundings and external conditions on causation—that he will regard a diseased individual not entirely as a person to be rendered healthy, but, to some extent, as a being to be kept healthy.

In an appendix several copies of leaflets are given dealing with such subjects as infant feeding (advice to mothers during pregnancy and nursing; breast-feeding, bottle-feeding), diarrhoea, and scarlet fever. These should prove of much value.

We cordially recommend the work as one full of informative matter.

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*Acute Appendicitis: Practical Points from a Twenty-Five Years' Experience.*

By HAMILTON WHITEFORD, M.R.C.S., L.R.C.P. Pp. 72.

London: Harrison & Sons. 1917. Price 4s. net.

IN studying this most readable volume you feel as if you were bringing to an experienced surgeon your difficulties in diagnosis and treatment, and he was advising you from what he has seen and found useful. Naturally there are many difficulties that he has either not met with or has not been able to touch upon, and the work thus differs from the ordinary text-book. The author approaches the subject first of all from the point of view of diagnosis, and cites cases to illustrate the fallacies. Then follows a chapter on the question of when to operate, and on the help to be obtained from the leucocytosis. Next, treatment is discussed, and there we find the author's individual peculiarities of method. He is strongly of opinion that every abdomen opened for removal of an acute appendix, whether pus be found free or not, should be drained, and he quotes bad results obtained by others where no drainage took place. This seems a one-sided argument, as he was not present at the other operations and therefore cannot judge properly, as pus may have been in the pelvis and not looked for by the first operator. The author's method of first exploring through the left rectus for pus seems unnecessary, because he only drains through that opening, and, if no pus is found, he closes it up and goes through the right rectus. Time is thus lost, and, even if pus be found, drainage can be as efficient for the right side. In no case does the writer approve of washing out the peritoneal cavity; and here also he is at variance with many surgeons. The last part of the book is concerned with post-operative treatment and complications, and this part is full of sound practical details. The book has no illustrations, but a good bibliography and index.

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*Dream Psychology.* By MAURICE NICOLL. Pp. ix. + 194. London: Oxford University Press and Hodder & Stoughton. 1917. Price 6s.

THIS is a most important and valuable book, especially at the present moment. Its scope is both wider and narrower than its title indicates. It is less a study of the psychology of dreams than a general survey of the psychology of psycho-neurosis according to the teaching of Jung. It is very far, however, from being a slavish compilation of the ideas of this worker. On the contrary, it is full of original thought and apt illustration, and gives a general survey of the unconscious and of its relation to the conscious, from which those best acquainted with the work of Jung may learn much.

Those who know that Jung is a follower of Freud and have gained their knowledge of these writers from the pages of the *British Medical*



*Journal* or the *Journal of Mental Science* will rub their eyes and wonder where they are if they should read this book. It should form a useful corrective to the wild misconceptions concerning a new development of psychology which are even more widely prevalent in the medical profession than among the general public.

The least satisfactory feature of the book is that dealing with the topic from which the title is derived. Dr. Nicoll has used dreams as his chief means of illustrating his principles of psychology, but his analyses are somewhat shadowy, and the evidence put before the reader is not sufficient to carry conviction. This weakness is almost certainly the direct consequence of a feature which differentiates his psychology and that of Jung from the teaching of Freud. To many the most attractive feature of Freud's psychology is its thorough-going determinism, which prevents the analyst from being content with interpretations in general terms and makes him dissatisfied until every detail of a dream has been explained. Dr. Nicholl explicitly throws aside this determinism, and thus lacks the impetus to that minute analysis of which dreams are capable.

The book can be strongly recommended to every physician who regards his patients as something more than machines. Even those who are afraid of the unconscious will find much to help them in such chapters as those on extroversion and introversion, and on the different grades of compensation.

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*The Cancer Problem.* By C. E. GREEN, F.R.S.E. Edinburgh:  
W. Green & Son, Ltd. 1917.

THIS is an important contribution by a layman to a very difficult subject. Starting from three accepted facts—first, that cancer is much more prevalent in some districts than in others; second, that it is very common in some trades and very uncommon in others; and, third, that these figures are practically constant from year to year. The author has been seeking during ten years for an explanation of these phenomena, and presents in this volume, in a very interesting and readable form, his conclusions. The array of facts and figures which he presents, supported as they are by numerous statistical tables and maps, gives the reader a good idea of the laborious nature of the investigation.

He finds that in country districts where the cancer mortality is low the district is comparatively flat, or at most with low, swelling, undulating hills, with houses built on their sides; whereas where the cancer mortality is high the district is intersected with gullies and valleys, with the houses, as a rule, situated in the hollows. In the case of large towns, those with a very irregular roof-level tend to

show a high cancer death-rate; whereas those with a more flat and uniform roof-level show a lower death-rate.

The conclusion is reached that one of the factors in the causation of cancer is defective elimination of the products of the combustion of fuel.

The author then discusses the incidence of cancer in relation to the character of the fuel burned in different localities and countries, particularly in Scotland and in France, whence he has been able to collect very full data, and he concludes that a high cancer death-rate is especially related to the combustion of coal, and in particular to the sulphur compounds given off by it while being consumed.

Different professions and trades come under review, and the author shows very ably that his theory affords some explanation of the increased incidence in most of those in which there is clear evidence of exposure or probable exposure to the influence of sulphur. He mentions the well-known and curious fact that lawyers have a higher cancer death-rate than physicians, but does not apply his theory here. Undoubtedly to do so would be difficult; though we may suggest that, in the case of the former of these professions, its high incidence may be due either to the subterranean sulphureous emanations and comments evolved in the course of legal investigations, or to the enforced retention of fiery objurgations in the parliamentarily correct environment of a court of law.

We shall permit ourselves to mention only one objection which occurs to us to apply to the author's theory, and that is to recall the frequency with which cancer is found amongst the lower animals, which presumably are not to any appreciable extent exposed to the action of sulphur compounds. It would also be interesting, in view of the author's theory, if one could find out if data exist relative to the cancer mortality amongst sulphur miners.

The later parts of the book deal with the parasitic theory of cancer growth, applying the analogies of parasitic tumour growth in animals and in vegetables; and furnishes appendices on the mycetozoa, on the influence of calcium on tumours, possibly by antagonising the action of sulphur compounds; on the draughts of chimneys; on cancer incidence in chimney-sweeps. He also gives statistical tables showing the cancer mortality in each registration district in England and Wales.

The volume is of great importance to the publicist as well as to the medical practitioner, and whether this theory is correct as a whole or only in part, sulphur sharing with other irritants the responsibility of predisposing to cancer, the investigation is well worth following up.

The author's results show what can be done by a layman with enthusiasm, and possessing a well-balanced mind, in contributing to our knowledge of a disease which is one of the most important causes of death in mankind.

*Malingering.* By A. BASSETT JONES and LLEWELLYN J. LLEWELLYN.  
Pp. 708. With 10 Plates. London: W. Heinemann. Price  
25s. net.

It is impossible for a medical man to read every medical book as it is published, and even difficult for him even to choose which books he should read. This volume on the subject of malingering is well worth reading by practitioner and consultant alike. It is lucidly written, and the style entertaining. The subject itself covers the whole field of medicine, surgery, and all specialties pertaining thereto. The authors, although going minutely into the nervous aspect of malingering, have not neglected the other systems of the body. It is pointed out how very close is the relationship of hysteria to malingering—how, in fact, before one can diagnose malingering one must exclude hysteria, and how before hysteria can be diagnosed it is necessary to be able to exclude organic disease. This is an intricate problem for anyone, however highly qualified. It is little wonder that the frequency with which a doctor diagnoses malingering has been said to be in inverse ratio to his professional skill.

In the paragraph on "The Groundwork of Decision" the authors say, "Ignorance may or may not be culpable, but ignorance coupled with self-conceit and presumption is not only culpable but dangerous. Yet how frequently does a medical man—nonplussed by unusual or paradoxical symptoms—dismiss a case as being functional, or, still worse, one of malingering?"

Before the diagnosis of malingering can be justly made, the absence of any pathological condition, no matter how apparently remote, must be proved. This necessitates a long and searching examination of the patient. There is no short cut to knowledge, but the authors have within 700 pages presented to their readers the majority of pitfalls which beset the medical examiner. They have done more than this in showing how these pitfalls may best be avoided.

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*A Laboratory Manual of Organic Chemistry for Medical Students.* By MATTHEW STEEL, Ph.D. Pp. viii. + 193. New York: John Wiley & Sons, Inc. London: Chapman & Hall, Ltd. 1916. Price 6s. net.

THIS book presents an appropriate and useful selection of experiments and tests in organic chemistry. These are tersely and lucidly described, and they deal with organic compounds, ranging from those of the simplest character up to such complicated substances as carbohydrates, fats, alkaloids, and proteins. A student who worked systematically through the course here described would attain a more intimate acquaintance with the chemistry of many organic substances employed



in medicine than is usually gained by medical students in this country. The course is somewhat lengthy, however, and how time could be found for it in the short period at present allotted to practical chemistry in the medical curriculum is not obvious, even although, as the preface states, "the recent development of biological chemistry has created a demand for a much broader training in experimental organic chemistry than was formerly required of medical students."

It is gratifying to find the word "concentrated" correctly applied to undiluted sulphuric and hydrochloric acids ("strong" hydrochloric acid on p. 76 is probably an inadvertence). In view of the special signification of the word "configuration" in organic chemistry, it seems unfortunate to employ it when the "shape" of a crystal is referred to (pp. 82, 118). "Tollen's" (p. 76 and index) should be "Tollens's."

*Electro-Therapy in Gynaecology.* By SAMUEL SLOAN, M.D., F.R.F.P.S.G., Consulting Physician to the Glasgow Royal Maternity and Women's Hospital, and to the Glasgow Hospital for Diseases of Women, etc. Pp. xxii. + 298. With 39 Illustrations. London: William Heinemann. No date. Price 12s 6d. net.

DR. SAMUEL SLOAN of Glasgow has earned the right to speak with authority on the still somewhat unexplored field of electro-therapy in gynaecology. He has from time to time published articles on the subject, and more particularly on that part of it known as ionisation, in the medical journals; and he has now incorporated in one volume the results of twenty years' experience, along with his more fully matured views on the value of this method of therapeutics. Whilst he disowns over-enthusiasm he at the same time fully believes in the efficacy of electrolysis and ionisation, and he points out, not without force, that most gynaecologists have, apart from surgical measures, practically no other remedies than "douching and tampons" for the very gynaecological troubles in which he uses electro-therapy with good effect. The work, which is well illustrated, deals in a clear and concise fashion with an intricate and not very easy subject, and no one who wishes to test these methods of treatment can hope to do so with full information until he has read what Dr. Sloan has written on the matter. A somewhat lengthy appendix gives details of 212 clinical cases, including a wide range of complaints.

*I. K. Therapy in Tuberculosis.* By NIVEN ROBERTSON, M.D., D.P.H. Pp. xiii. + 152. London: Baillière, Tindall & Cox. 1917. Price 5s. net.

THIS book is a restatement of the claims of Spengler's I. K. for a position as a recognised remedy for tuberculosis. There is nothing



said in this volume but what has already been said. The methods of administration of the substance are carefully stated, and will form a sure guide to anyone wishing to try this form of treatment.

The author is to be congratulated on his honesty in dealing with the results of his own cases. In a series of forty-one, which apparently form the basis of the writer's experience, the result is expressed with unvarying monotony in such words as "I. K. had no apparent effect." The same result could apparently have been achieved by the subcutaneous injection of water.

The literature which the author quotes shows that there are wide differences of opinion amongst those who have used I. K. One clinician begins with a dose of 0.001 c.c. and another with 0.000,000,01 c.c. Some claim it as a specific, others state that it is useless, and still others that it is dangerous.

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## NEW EDITIONS.

*A Manual of Practical X-Ray Work.* By DAVID ARTHUR, M.D., D.P.H., and JOHN MUIR, B.Sc., M.B. Second Edition. Pp. 351. With 185 Illustrations. London: William Heinemann. 1917. Price 12s. 6d. net.

THE authors of this work present a volume which, from cover to cover, affords valuable information: no matter whether the reader be beginner or adept in the science and practice of radiology, there is much of interest and instruction. Perusal of this book affords genuine pleasure, in that the work is a masterly excursion into the history, physics, and technique of X-rays.

In the preface the authors aim at producing a book which will be a "practical manual," and in this they have entirely succeeded. In a manual of such all-round excellence it is difficult to single out any portion of special merit; still, the science of radiology will benefit by their fair comparison of the merits of coil and transformer. A more intimate acquaintance with the latter in its more modern form will no doubt constrain them to yield to the transformer that pride of place to which the latest type of this instrument is entitled.

If the price of the Coolidge tube had been more moderate, the paragraphs on this important piece of apparatus might have been amplified with considerable benefit; the Coolidge tube used conjointly with transformer and the filament heated therefrom give almost unsurpassable results.

The chapter on localisation of foreign bodies is exhaustive and practical, but the opinion expressed, that the scale and compass method of localisation is less convenient and exact than another method described, cannot be maintained in practice. The chapter on diagnosis is eminently practical, and abounds in valuable suggestions.

The book is well written and admirably illustrated throughout, and a close study of the work will fill with admiration all interested in the science, and will afford to others about to undertake X-ray work an excellent introduction to the study.

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*Psychological Medicine.* By MAURICE CRAIG, M.D., F.R.C.P. Third Edition. Pp. xii. + 484. With 27 Plates, some in Colour. London: J. & A. Churchill. 1917. Price 15s. net.

THE appearance of a third edition of Dr. Craig's manual on mental diseases for practitioners and students is a testimony to its growing popularity. Though not perhaps so stimulating to thought as some other books on the same subject, it is obviously the outcome of much

thought and wide reading on the part of its author. It is practical and useful, and anyone who has mastered its contents will find himself in possession of a most serviceable fund of knowledge on which to base his diagnosis and treatment of a class of diseases specially difficult in these respects.

As stated in his preface, Dr. Craig has not added much to the previous edition of his book. Reference is made to the Mental Deficiency Act, which came into operation in 1913, but little information can be given except to explain the Act, as the war has almost completely stopped its application. Psycho-analysis is explained in a general way, and, while deprecating the large claims made for it by some, he is ready to admit its helpfulness in a few special cases. Greater attention is given to a consideration of the many new types of mental disturbance produced in soldiers by the stress and injuries of the present war. The numbers of these cases are now large, and so many skilful and experienced specialists are studying their symptoms that a real advance in our knowledge of these puzzling conditions is confidently expected. Dr. Craig contributes not a little to this advance by his own experience of such cases, and no doubt when the war is over, and time can be given to more extensive and intensive study of them, the contributions to knowledge of both normal and morbid psychology will be substantial.

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*A Handbook of Midwifery.* By COMYNS BERKELEY, M.D., F.R.C.P. (Lond.). Fourth Edition. Pp. 513. With Colour Frontispiece and 74 Illustrations. London: Cassell & Co., Ltd. 1917. Price 6s. net.

A FOURTH edition of this handbook for midwives has appeared, thoroughly revised, its contents re-arranged, and its scope considerably enlarged by the addition of several chapters on elementary physiology. Though essentially a handbook for midwives, the author has, we think with advantage, indicated not merely the precise treatment of the various complications of labour as they are to be carried out by the midwife, but also the probable line of treatment which the doctor will follow on his arrival. He makes it perfectly clear that such treatment is never to be attempted by the midwife unless in very exceptional circumstances.

We are glad to observe that the author has devoted a few pages to cancer of the uterus, a subject which receives but scant attention in most manuals of midwifery written for nurses, and we welcome it because of the incalculable service which a monthly nurse or midwife can render to women if she is fully acquainted with the nature of this disease. Dr. Berkeley has succeeded in presenting a wonderfully comprehensive little handbook, and every chapter carries with it the weight of an experienced teacher and operator.

*Malingering.* By Sir JOHN COLLIE, M.D. Second Edition. Pp. 664.  
London: Edward Arnold. 1917. Price 16s. net.

THE volume before us is a most interesting one and goes far beyond the limits which the title would appear to set. For not only have we a treatise on the title subject, but a very full account of court practice and a good deal of case law. The author has a fluent style, and imparts a very real atmosphere to the descriptions he gives of the various types and varieties of malingering. He also contrives to incorporate much sound clinical wisdom, and has not omitted to include within his pages much that is quite late as regards clinical tests and diagnostic methods.

This, the second edition, is more ample by far than its predecessor, and may be thoroughly recommended to those interested in court work. One fancies the book will be read by many lawyers engaged in workmen's compensation cases. They will find it useful.

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*A Text-Book of Practical Therapeutics.* By HOBART AMORY HARE, M.D. Sixteenth Edition. Pp. 1009. With 156 Illustrations.  
London: Henry Kimpton. 1917. Price 25s. net.

THIS, the sixteenth, edition of Hare's *Therapeutics* fully maintains the high reputation of the author as a teacher of a difficult art. The work before us is not a mere list of drugs and doses, but a most interesting clinical manual with the pleasing power of rewarding the searcher for information with satisfying supplies of knowledge. It is difficult to refer to any point on which adequate information is not to be found in its proper place and in abundant measure. One omission seems to have occurred, and that is, that no reference appears to exist to a useful substance—Kava-kava—which appears in the 1914 B. P. One might be disposed to suggest that the dose of guaiacol for external application as an antipyretic is rather high (10 to 15 m. is probably enough), and to hint that the drug is not free from cardiac depressant effects. But these are minor matters. The volume is one of the classics of medicine and nothing less, and ought to be consulted almost daily by those engaged in the practice of physic.

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*Text-Book of Ophthalmology.* By ERNST FUCHS. Fifth English Edition.  
Edited by ALEXANDER DUANE, M.D. Pp. xxv. + 1067. With  
462 Illustrations, and 4 Colour Plates. Philadelphia and  
London: J. B. Lippincott Co. 1917. Price 30s. net.

WHATEVER other works the ophthalmologist may possess, a copy of Fuch's text-book is generally regarded as indispensable. No German edition since the eleventh has appeared, and the present volume contains many additions and alterations supplied by the author himself as well as by the translator which are not present in any German edition. Thus, as is stated in the preface, the book is now in some ways a new work. Much has been rewritten and a considerable



amount of the text has been rearranged, while in many ways, too numerous to specify, the subject-matter has been elaborated and brought up to date.

The method of keeping abreast of modern progress by incorporating the results of recent work by various authors is apt, however, to interfere to some extent with the individuality of authorship and the clear expression of the views of a single widely experienced observer, which formed the great charm and advantage of the older text-books, and of the earlier editions of this work. The result, especially in such a rapidly growing subject as ophthalmology, tends to be somewhat unequal and sometimes confusing, while the constant interpolation of sentences in brackets has a disturbing, if not actually irritating, effect. Thus we find in one place that the use of coloured test objects in examining the field of vision is described as affording as a rule quite unsatisfactory results, and in another as "a particularly delicate test."

In the chapter on glaucoma it is stated in a translator's note that Elliot's trephining is often followed by detachment of the choroide. This is surely not a usual experience; it is not even mentioned in Elliot's book on trephining. Again, in the description of the operation, the ends of the conjunctival incision are prolonged to the corneal margin, a procedure which Elliot himself specially advises against.

In connection with sight testing, the impression is conveyed that the data obtained from Snellen's test, which are usually expressed as fractions— $\frac{6}{60}$ ,  $\frac{6}{24}$ , and so on—may be equally stated in fractional terms of normal visual power, *i.e.*  $\frac{6}{60}$  equals  $\frac{1}{10}$  normal vision or  $\frac{1}{12}$  one-half. Such a statement, if made without qualification, is very apt to be misleading, as the true relationship of these data to normal vision is by no means so simple. The real value of  $\frac{6}{12}$ , for instance, is probably nearer  $\frac{9}{10}$  than  $\frac{1}{2}$ .

In view of the trend of modern legislation affecting workmen, industrial diseases and injuries of the eye, and their relationship to the efficiency and compensation of workmen, might with advantage be dealt with in a separate chapter.

The illustrations as a whole are good and useful, though many of them hardly do justice to the general standard of the book or to the capabilities of modern printing.

Notwithstanding such minor defects, this work is still the premier text-book on ophthalmology, and the present edition will further enhance its reputation and justify the anticipation that it will continue to maintain its acknowledged position.

In spite of the untoward present circumstances and the addition of nearly a hundred pages, the price has been increased by only five shillings.

## NOTES ON BOOKS.

IN *Glimpses of my Life in Aran* (John Wright & Sons, Ltd., price 2s. 6d. net), Miss Hedderman writes of her experience as district nurse in the Aran Islands, off the West Coast of Ireland—the dangers, hardships, and difficulties she encountered, and the superstitious customs of the people, which made it well-nigh impossible to render medical aid. Her work will be valued by students of folklore and primitive medical customs.

Dr. J. Blomfield's *Anæsthetics* (pp. viii. + 147. London, Baillière, Tindall & Cox, 4s. net) has reached a fourth edition, which shows that it has supplied a want, but it suffers from compression perhaps even more than the average student's handbook. The general principles laid down are, however, sound, and the difficulties and dangers of administration, with their prevention and treatment, are brought prominently before the reader's notice. New and specialised methods are very cursorily described as not being adapted to the needs of the general practitioner. Appropriate to the time, a short, sensible chapter on anæsthetics in military surgery has been included in this edition.

*The Surgical Clinics of Chicago* (W. B. Saunders Co., £2, 2s. net per annum) seems to be the lineal descendant of *The Clinics of John B. Murphy at Mercy Hospital, Chicago*, which the sudden death of that distinguished surgeon brought to an end. The new venture, of which we have received the first number, has an excellent model before it, and promises to live up to the high standard set by Dr. Murphy. It has the advantage of presenting a greater variety of views, as a full dozen of the most representative surgeons of Chicago contribute to this issue. The papers are short practical expositions of clinical problems, and are well illustrated. We wish the journal, which is to appear bi-monthly, the same success as its predecessor.

*International Clinics*, by various authors, Vol. IV., twenty-sixth series (J. B. Lippincott Co., 1916, price 35s. for the 4 vols.), continues in an excellent fashion to fulfil its mission of keeping practitioners informed of the more recent developments of medical science in all its branches. Most of the authors hail from America, although there is an excellent paper on "Infant Welfare" by Dr. J. W. Ballantyne. Other contributors deal with such varied subjects as migraine, duodenal ulcer in infancy, convergent squint, and criminal psychology; but perhaps the most noteworthy section of the book is that devoted to surgery, which occupies about half the volume.

A few of the titles may be mentioned. W. E. Lower gives a very

explicit account of diverticulum of the urinary bladder, and his paper is illustrated by twenty-four beautiful plates, radiographic and anatomical. The treatment of cleft palate and harelip is dealt with by V. P. Blair in a concise and practical article, and here again the illustrations are an attractive feature. A notable contribution to the surgery of lung abscess is made by A. P. C. Ashurst, while new light is thrown upon the disputed subject of the mechanics of backache by P. B. Magunson. The brevity and practical nature of each article will go far towards commending the *Clinics* to busy practitioners.

*Mosquitoes and their Relation to Disease*, by F. W. Edwards (price 1d.). *The Bed-Bug, its Habits, etc., and how to deal with it*, by Bruce F. Cummings (price 1d.). *Species of Arachnida and Myriopoda Injurious to Man*, by Stanley Hirst (price 6d.) (London, Trustees of the British Museum).

These three works belong to the important and useful "Economic Series" published by the Trustees of the British Museum. They are well got up, well illustrated, and, being published at a low price, ought to be of great service in spreading some knowledge of the obscure but important animal forms of which they treat.

Mr. Edwards' account of the mosquitoes is excellent, containing just the information the reader wants—how to know mosquitoes and their larvæ; where they live; their connection with disease; and how to control them.

The bed-bug is dealt with in an interesting manner by Mr. Cummings. It is important to note that the remarkable facts as to the fertilisation of the female, first described, we believe, in Patton and Cragg's *Text-Book of Medical Entomology*, and by some deemed impossible, have been fully confirmed by him. The author thinks that the transmission of diseases by bed-bugs will not be found to be of general occurrence.

Mr. Stanley Hirst deals with the arachnida, etc., in rather a different manner. His account presupposes some knowledge of the subject by the reader, many technical terms being used, the meanings of which are not given. His account of the mites and ticks is of value. Only forms noxious to man are dealt with.

REPORTS, TRANSACTIONS, ETC.—*The Reports of St. Thomas' Hospital*, Vol. XLIII. (J. & A. Churchill, 1916), contain an enormous amount of statistical matter arranged in tabular form, with short supplementary notes on cases of special interest. The surgical registrar, Mr. S. H. Ronquette, has made a special statistical review of all the cases of acute intestinal obstruction operated upon in the hospital during the years 1908-1913—615 in number. As the results are given in the form of tables they do not lend themselves to quotation, but the paper will be useful to anyone working on similar lines. The reports bear ample evidence of the continued activity of this great hospital.

*The Medical and Surgical Reports of the Episcopal Hospital, Phila-*



*delphia*, Vol. III. (W. J. Dornan, 1915), opens with a paper by Ellis E. W. Given on the "History of Anæsthesia," which contains much interesting information regarding the attempts made to alleviate the pain of operations before Davy suggested inhalation of nitrous oxide gas. Curiously enough the story ends with Morton's demonstration of the possibilities of ether as an inhalation anæsthetic. Chloroform is entirely ignored, as well as more modern methods. For the rest, the volume contains a large number of interesting papers, among which those on the modern surgery of bones and joints are prominent. The illustrations are exceptionally good.

*Index-Catalogue of the Library of the Surgeon-General's Office, U. S. Army*, Vol. XXI. (Waterworth-Zysman). This volume completes the second series of this great medical index. In an introductory note the present librarian—Lieut.-Col. C. C. McCulloch, Jun., gives a brief history of the library and a statement of its present condition. Prior to 1836 the surgeon-general's library was "a small departmental outfit of medical books;" it now contains over half a million volumes and pamphlets, and 5249 portraits of physicians. A large part in building up the library was played by Dr. John S. Billings, but the work of preparing the index-catalogue requires many collaborators, whose services are here acknowledged. We note with pleasure that a third series of the index-catalogue is in preparation.

The annual volume of the *Transactions of the American Gynecological Society for the year 1916* (Philadelphia, W. J. Dornan) shows no falling off either in quantity or in quality. The outstanding feature is the series of articles dealing with syphilis in its obstetrical and gynecological aspects. More than four hundred pages are occupied with these articles, which practically cover the whole field of syphilology in respect to women. Dr. Edward P. Davis takes for his subject syphilis in its relation to obstetrics; Dr. Sigmund Pollitzer writes on syphilis in relation to some social problems; Drs. Gellhorn and Ehrenfest on syphilis of the internal genital organs; Dr. R. Buhman on the specificity of the Wassermann reaction; Dr. Reuben Peterson on syphilis in the University of Michigan Obstetric and Gynecologic Clinic; F. L. Adair on the relationship of syphilis to abortion, miscarriage, and foetal abnormalities; Dr. F. D. Plass on foetal and placental syphilis; Dr. Morris Slemmons on the agreement between the Wassermann reaction and placental histology; Dr. C. C. Norris on syphilis of the body of the uterus; Dr. Baeslack on experimental syphilis; and Dr. Fred. J. Taussig writes on "syphilitic fever." Dr. Palmer Findley has a thought-provoking paper on rupture of the scar of the previous Cæsarean section. What the President (Dr. Wesley Bovée) thinks of "twilight sleep" may be gathered from the following sentences in his address:—"In the sweeping march over the earth's surface of this dangerous method, the professional and moral fibres of



even the flower of the obstetric world have been challenged. It has nearly equalled the tales of the French Revolution. It is believed the danger of this awful flood has passed and the conscientious and competent obstetrician may now come down from his Mount Ararat and pursue the even tenor of his way."

BOOKS RECEIVED.

- ANNUAL Report of the Sanitary Commissioner with the Government of India for 1915.  
(Calcutta, 1917) 3s. 9d.
- BURNS, JOHN. *Chemists' Income Tax Guide* . . . . . (W. & R. Chambers) 1s. 6d.
- CARMAN, R. D., and A. MILLER. *The Roentgen Diagnosis of Diseases of the Alimentary Canal* . . . . . (W. B. Saunders Co.) 40s.
- COLLECTED PAPERS of the Mayo Clinic. Vol. VIII., 1916. . . . . (W. B. Saunders Co.) 40s. 6.50
- FAUGHT, F. A. *Blood-Pressure*. Second Edition . . . . . (W. B. Saunders Co.) 40s. 3.25
- GREENE, R. H., and H. BROOKS. *Diseases of the Genito-Urinary Organs and the Kidney*.  
Fourth Edition . . . . . (W. B. Saunders Co.) 40s. 5.50
- HENDERSON, C. G. *Blindness in India and the Possibilities of its Diminution*  
(King Bros. & Potts, Ltd.) —
- HUNT, E. L. *Diagnostic Symptoms in Nervous Diseases*. Second Edition  
(W. B. Saunders Co.) 40s. 2
- INSTITUTIONAL Care of the Insane in the United States and Canada. Vol. IV.  
(Johns Hopkins Press) —
- JACKSON, D. E. *Experimental Pharmacology* . . . . . (H. Kempter) 20s.
- JORDAN, E. O. *A Text-Book of General Bacteriology*. Fifth Edition  
(W. B. Saunders Co.) 40s. 3.25
- KEN, W. W. *The Treatment of War Wounds* . . . . . (W. B. Saunders Co.) 40s. 1.75
- KEMP, R. C. *Diseases of the Stomach, Intestines, and Pancreas*. Third Edition  
(W. B. Saunders Co.) 40s. 7
- LUCIANI, L. *Human Physiology*. Vol. IV.—The Sense Organs . . . . . (Macmillan & Co., Ltd.) 21s.
- MERCIER, CHARLES. *The King's Fishing* . . . . . (The Mental Culture Enterprise) 1s. 3d.
- MORRIS, Sir MALCOLM. *Diseases of the Skin*. Sixth Edition . . . . . (Cassell & Co., Ltd.) 12s.
- MUSSER, J. H., and T. C. KELLY. *A Handbook of Practical Treatment*. Vol. IV.  
(W. B. Saunders Co.) 40s. 7
- NORRIS, G. W., and H. R. M. LANDIS. *Diseases of the Chest* . . . . . (W. B. Saunders Co.) 40s. 7
- OWEN, H. R. *The Treatment of Emergencies* . . . . . (W. B. Saunders Co.) 40s. 2
- SEWELL, C. W. *A System of Hand and Finger Re-education* (Baillière, Tinsdale & Co.) 6d.
- SEAR, I. J. *A Manual of Nervous Diseases* . . . . . (W. B. Saunders Co.) 40s. 2.75
- STRELWAGON, H. W. *A Treatise on Diseases of the Skin*. Eighth Edition, revised  
(W. B. Saunders Co.) 40s. 6.50
- WHITLEGGE, Sir A., and Sir G. NEWMAN. *Hygiene and Public Health*. Thirteenth  
Edition . . . . . (Cassell & Co., Ltd.) 10s. 6d.
- WINSLOW, K. *The Prevention of Disease* . . . . . (W. B. Saunders Co.) 40s. 1.75

**ANALYTICAL REPORTS.****EUSOL.**

(DUNCAN FLOCKHART &amp; Co., EDINBURGH.)

OF the many new antiseptic agents that have been introduced to meet the surgical requirements arising out of the war, the solution of hypochlorous acid known as Eusol seems the most likely to retain a permanent place. Before being placed on the market it was not only thoroughly investigated in the Pathological Laboratory of Edinburgh University, but had an extensive clinical trial, which established its merits. It had not the misfortune to be heralded in the lay press, nor has it had to rely upon any official patronage. Yet an increasing number of the field cards arriving with the wounded from France show that "eusol dressing" has been employed at the casualty clearing stations and base hospitals, and the state of the wounds bears favourable comparison with that following the use of other agents.

For the civilian practitioner who does not use large quantities, it has one drawback, in that its antiseptic power soon deteriorates, and it must be freshly prepared when required. To overcome this difficulty Messrs. Duncan Flockhart & Co. have issued the constituents for preparing the solution in carton form. Each carton contains two packets, the contents of which, when added to a pint of water, make a solution that is ready for immediate use. The cost is so low that any of the lotion not used may be thrown away. Eusol thus prepared may be used as a lotion to bathe a wound, as a fomentation dressing, for gauze packing, for irrigation of deep wounds (interrupted or constant), or as a bath. It may also be used, full strength or diluted, to wash out the bladder or as a vaginal douche, but for these and other similar purposes the solution should be filtered or strained through cotton-wool. When used for intravenous injection the solution must be filtered bright, and in each pint a tablet of sodium chloride is to be dissolved. The solution must be warmed to 98° F. We can confidently recommend this preparation as being convenient, economical, and efficient.

**MEDICATED SOAPS.**

(CHARLES MIDGLEY, LTD., MANCHESTER.)

A WIDE assortment of medicated soaps has been prepared by Messrs. Midgley to meet the requirements of those who prefer this medium for the application of drugs to the skin. The base of these superfatted soaps is made from fresh beef tallow and the finest vegetable oils in such a way as to render it perfectly neutral. According to requirements, the soap may be used as an ordinary toilet soap, as a lather well rubbed in and after a few moments wiped off with a soft, dry towel, or, after being rubbed in, the lather is allowed to dry upon the skin.

Certain drugs are prepared in the form of soap powders and others as bath powders.

**TOILET LANOLINE.**

(BURROUGHS WELLCOME &amp; Co.)

ALTHOUGH primarily intended for toilet use, "Wellcome" Brand Lanoline is also suitable for application in many skin conditions, for which purpose its great refinement and purity render it preferable to crude preparations of wool fat. It is delicately perfumed, and rubs readily into the skin without leaving any suggestion of a viscid film. Messrs. Burroughs Wellcome & Co. issue the preparation in collapsible tubes.

# EDINBURGH MEDICAL JOURNAL.

## EDITORIAL NOTES.

The late Dr. Edmund  
F. T. Price.

WE record with great regret the death of Dr. Edmund Price, which took place on 27th October. Dr. Price was an enthusiastic member of A Company of the City of Edinburgh Volunteer Regiment, and died suddenly while engaged in military operations at Corstorphine. He was held in the highest respect alike by officers and men in his company, and it is to be feared that he overtaxed his strength in his zeal to become efficient. Among his medical confrères his death has been keenly felt. Some years ago he relinquished general practice in favour of radiographic work, in which he was exceptionally expert. Nothing satisfied Price in the way of X-ray plates but the best, and he not only produced work of the highest quality, but acquired remarkable skill in interpreting radiographic evidence. This he never sought to strain beyond its legitimate sphere, yet he seemed instinctively to detect points of vital importance, and his assistance in diagnosis was widely sought and highly valued. His published work on radiology, much of which appeared in our pages, was of a high order, and was marked by critical acumen and scientific discrimination. Two of Dr. Price's sons are members of the medical profession, and are serving with the Army abroad. To them, and to his widow and the other members of his family, we offer our sincere sympathy.

Social Study and  
Training.

STEPS have recently been taken to inaugurate, under the auspices of the University, a School of Social Study and Training, and an Association, presided over by the Principal, Sir J. A. Ewing, is making arrangements to start work in the beginning of the new year. Recent developments in regard to various Public Health measures, and particularly in matters relating to Maternity and Child Welfare, bring such a movement into close relationship with the medical profession, and we desire to enlist the interest of our readers in the scheme.

The purpose of the Association is to furnish social administrators and workers who desire to take up posts as welfare supervisors in

factories, welfare workers under Public Health authorities, *e.g.* in maternity and child-welfare schemes, and in other important branches of local and national administration, with a wide outlook and an adequate practical knowledge of the problems with which they may have to deal.

Lecture rooms and other teaching facilities will be provided by the University, but funds are required to provide for equipment and to defray other necessary expenses. Professor James Seth is acting as the Hon. Treasurer.

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### CASUALTIES.

**KILLED** in action, Captain JOHN STRUTHERS, South African Medical Corps.

Captain Struthers graduated M.B. and C.M. at Edinburgh University in 1894, and before the war was in practice at Nevra, South Africa.

**DIED** of wounds and gas poisoning, on 23rd October, Captain WILLIAM MORRISON, M.C., R.A.M.C.

Captain Morrison graduated M.B., Ch.B. at the University of Edinburgh in 1909. He thereafter joined the British East African Medical Service. In 1915 he took a temporary commission in the R.A.M.C., and in 1916 was awarded the Military Cross.

**DIED** from the effects of gas poisoning, on 24th October, Captain ABRAHAM ZADOK PHILIPS, R.A.M.C.

Captain Philips was a graduate of Edinburgh University (M.B., Ch.B., 1910; M.D., with commendation for his thesis, 1913). In 1915 he obtained the F.R.C.S. (Edinburgh). In the first year of the war he acted as surgeon to a voluntary hospital at Dunkirk, and later he joined the R.A.M.C.

**DIED** of wounds and gas poisoning, on 23rd October, Captain DAVID JAMES SHIRES STEPHEN, M.C., R.A.M.C.

Captain Stephen was a graduate of the University of Aberdeen (M.B., Ch.B., 1910, and M.D., 1912). After filling various hospital posts in England he joined the R.A.M.C. in 1914, and was awarded the Military Cross in the following year.

**KILLED** in action, in October 1917, Captain ROBERT HAIG SPITTAL, R.A.M.C.

Captain Spittal graduated M.B., Ch.B. in the University of Aberdeen in 1905. After acting as Demonstrator of Anatomy he entered practice, and settled at South Bank, Yorkshire. In May 1916 he received the Serbian Order of St. Sava, 5th class.

**DIED** on service, on 17th October, as a result of pneumonia following wounds, Captain GEORGE ADAMS MACFARLAND, R.A.M.C.

Captain Macfarland took the Scottish Triple Qualification in 1903.



KILLED in action, on 5th October 1917, Captain WILLIAM DOUGLAS REID, M.C., R.A.M.C.

Captain Reid was born in New Zealand, and graduated M.B., Ch.B. at the University of Edinburgh in 1910. He was awarded the Military Cross on 3rd March 1917 for devotion to duty after being wounded himself.

DIED of wounds received on 31st July, Captain JOHN JAMES PERCIVAL CHARLES, R.A.M.C.

Captain Charles graduated M.B., Ch.B. at Edinburgh University in 1909.

#### MEDICAL STUDENTS.

MARCUS BROADFOOT CLARK, Lieutenant, Argyll and Sutherland Highlanders, was killed on 25th September. Before the war he was a fourth-year student in the University of Glasgow.

GEORGE ARNOLD HUNTER, Lieutenant, Scottish Horse, died at Port Said in August. Lieutenant Hunter was a first-year student in the University of Edinburgh before joining the Scottish Horse.

#### Triple Qualification Passes.

At the examinations of the Board of the Royal College of Physicians of Edinburgh, Royal College of Surgeons of Edinburgh, and Royal Faculty of Physicians and Surgeons of Glasgow, held in October, the following candidate passed the *First Examination*:—Rachel Caplan.

The following candidates passed the *Second Examination*:—Ronald G. Clouston, Robert C. Dow, and William Campbell.

The following passed the *Third Examination*:—James C. Meek, Lawson L. Steele, P. M. Fernando, Lizzie R. Clark, Mayberry H. Carleton, Reginald L. Wright, and Jacob J. van Niekerk.

The following candidates, having passed the *Final Examination*, were admitted L.R.C.P.E., L.R.C.S.E., L.R.F.P.&S.G.:—Robert Pollok, Dumbarton; Archibald Bissember, British Guiana; Hendrik Wildebeer, Dutch Guiana; Jackson Baird Minford, Templepatrick; Frederic Gerald Pailtherpe, Redhill, Surrey; George Nicol Groves, Leith; Cuthbert Gaulter Magee, Fleetwood; Agnes Emilie Keen, Woolton; Harold Gengoult Smith, Melbourne; Bernard Malachy Lynam, Bellaghy; Roberto Quesada-Jimenez, San Jose, Costa Rica; Iwan Davies, Llandysul; Len Philip Samarasingha, Ceylon; Cecil Vale Samwell, Leeds; Phoebe Foott, India; Reginald Douglas Howat, East Kilbride; Donald McKenzie Black, Paisley; George Patrick de Silva, Ceylon; and Clifford Durham Pullan, Eccleshill.

The following candidates, having passed the *Final Dental Examination*, were granted the diploma L.D.S., R.C.S.(Edin.):—Willem Nieuwstadt-Retief, South Africa; James Gould, Edinburgh; and James Rowan Sherrard, Ireland.

At the recent examination of the Board of the Royal College of Physicians of Edinburgh, Royal College of Surgeons of Edinburgh, and Royal Faculty of Physicians and Surgeons of Glasgow, the following candidates, having passed the examinations, were admitted *Diplomates in Public Health*:—Annie Rankine McKail, M.B., Ch.B., Glasgow; Ella Ferrier Pringle, M.B., Ch.B., Edinburgh; and John Lewis Owen, M.B., Ch.B., Edinburgh.

## THE NEW ZEALAND SCHEME FOR PROMOTING THE HEALTH OF WOMEN AND CHILDREN.

By F. TRUBY KING, M.B., B.Sc. (Public Health), Edinburgh; Ettles Scholar; Member of the Psychological Association; Lecturer on Mental Diseases, Otago University; President of the Society for the Health of Women and Children, New Zealand.

IN the course of the last seven years a society (the Society for the Health of Women and Children) founded in Dunedin, New Zealand, with the object of improving the foundations for child life, has seen a steady fall in the local infantile death-rate from an average of 80 per thousand for 1900-07 down to 40 per thousand for the last two years—the latest statistics showing only 38. Prior to this organised and concerted effort there had been no tendency to any decline in the deaths of children under one year—indeed the rate for Dunedin in 1907 was 90 per thousand. With the progressive expansion of the society to cover the whole country (there are now some seventy branches, with 1500 members on the local executive committees) a similar tendency has manifested itself in all directions, the infantile mortality of the whole dominion having come down from nearly 90 per thousand to 56 per thousand for 1911 and 51 for 1912.

However, the society is less concerned in reducing the death-rate than in improving the health of the people. As a health society it is more interested in firmly establishing the all-round fitness of the 24,000 or 25,000 annual new arrivals who will live than in reducing the potential deaths from 2000 to 1000; but the problems are, of course, intimately related.

Dunedin is a city with a population of some 60,000, and has a fair proportion of factories and other concomitants of city life more or less inimical to the rearing of healthy children. As regards site, soil, mean temperature, daily and seasonal variations, moisture, solar radiation, etc., there is nothing to mark out Dunedin from the average conditions of the southern counties of England. Dunedin has no outstanding advantages, climatic or social, over the picked fourteen "Smaller Towns" of Kent ("the Garden of England"), grouped by the Registrar-General as having populations ranging from 20,000 to 50,000 inhabitants, and including such places as Beckenham, Bromley, Tunbridge Wells, Dover, Margate, and Ramsgate—towns with a large proportion of the well-to-do residential class and comparatively few of the submerged. Why

**TABLE SHOWING HOW MANY CHILDREN DIE IN THE FIRST YEAR OF LIFE FOR EVERY HUNDRED BORN.**

**ST. PETERSBURG and MOSCOW (1910).**

		28 %
	17 %	VIENNA (1910)
	15½ %	BERLIN (1910)
	14 %	LIVERPOOL (1910—1912)
	13½ %	MANCHESTER (1910—1912)
	13¼ %	LONDON (1900—1909)
	11½ %	„ (1910—1912)
	8½ %	STOCKHOLM & CHRISTIANA (1910)
	8 %	DUNEDIN = Average for 7 years (1900—1907)
	6½ %	„ = Average for next 5 years (1907—1912)
	6 %	„ = Average for 3 years (1909—1912)
	5 %	„ = Average for 2 years (1910—1912)
	4 %	„ = Mortality for the year 1911—1912
	3½ %	„ = „ „ „ 1912—1913

Note the extreme range of Infantile Mortality from the death within a year of more than a quarter of the children born in St. Petersburg and Moscow to the death of less than one in twenty-five for Dunedin.

The figures are almost as striking if taken for Countries instead of Cities. Thus, the latest annual statistics available show that out of 1000 children born there died in the first year of life:

In Russia, about	250
In Germany and Austria, about	175
In England and Wales (for 1910)...	117
In Norway (1908)...	76
New Zealand (1912—1913)	51

Next to New Zealand, the Norwegian Infantile Death Rate is the lowest in the world. This is attributed to the fact that in Norway nearly all babies are suckled.

should such places have an average infantile death-rate above 80 per thousand and Dunedin fall below 40 per thousand?

Before attempting to give an answer I should like to ask a broader question, viz.:—Are we satisfied as to the soundness of the foundations on which the rearing of infants was based in the latter half of the Victorian era, and, if not, have we freed ourselves, even now, from the thraldom of errors which our profession endorsed or originated last century and which for a time dominated us and the public alike? Take one of the most vitally important considerations, viz.:—

#### FOOD AND FEEDING.

1. Feeding intervals.
2. The average quantity of food needed in the successive months of babyhood.
3. Breast-feeding and artificial feeding—the best forms of artificial food.

1. *The best intervals between feedings, and the desirability or otherwise of night-feeding (i.e. feeding between, say, 10 or 11 P.M. and 5 or 6 A.M.).*

How did we arrive at our present tables, showing feeding every two hours from 6 A.M. to 10 P.M., and one or more night-feedings—ten feedings in all? I have come across no one who could give any definite answer to this question. Dr. David Forsyth says that “feeding-tables” for infants are of quite recent origin, and that the earliest he has found appears in a text-book dated 1884. Presumably the authors merely set down what had become more or less customary at the time, and the prevailing custom was no doubt largely determined by the fact that the wave of artificial feeding with very attenuated milk mixtures (having for a month or so only a third of the strength of human milk) had brought about the impression that frequent feeding of infants was universally desirable, simply because it had become more or less necessary under the prevailing conditions of bottle-feeding. Of course the necessity for using highly diluted milk and frequent feeding disappears when properly modified milk is used. However, the fact that the publishing of Czerny and Keller’s classic investigations and conclusions (showing that feeding every four hours sufficed, and that the feeding of babies more often than every three hours was certainly undesirable) failed to effect any widespread change for nearly ten years, shows how hard it is to bring about the reversal of printed instructions, however



erroneous, once they have been widely and authoritatively circulated and generally adopted.

The curious thing is, that the arbitrary dogma of two-hourly feeding should have been so quickly and unreservedly accepted by our profession, in face of the fact that Dr. Bull's well-known book for mothers, which was so much in vogue in the earlier half of the Victorian era, stated specifically that the best feeding times after the first month were every three or four hours, and that there should then be no "night-feeding."

I have spoken confidently as to two-hourly feeding being *erroneous*, because practice shows conclusively that babies do better when fed at longer intervals; and a wide series of independent scientific investigations (rendered possible only through subsequent advances in bacteriology, radiology, biochemistry, and biophysics) have since come to confirm the earlier clinical conclusions, by showing that the time needed, both for gastric digestion and for the keeping in check of microbes, indicates the desirability of longer intervals. It is gratifying to find that at last there has appeared in England a sufficiently definite and specific official pronouncement almost to compel general attention to this extremely important question—see the following paragraph in the Second Report to the Local Government Board on Infant and Child Mortality, 1912-13, by Dr. Arthur Newsholme:—

"There can be little doubt that one important factor leading to the abandonment of breast-feeding has been the mistaken idea that two-hourly meals are required by the infant during the day, and four-hourly, or even three-hourly, meals at night. In most instances four-hourly meals suffice from birth onwards, or at least from the end of the first month, the infant not being fed at all from 10 P.M. to 6 A.M. The important conclusion that infants *thrive better* with the less frequent feeding has been *proved* on a large scale in the experience of infant welfare work in the most important centres in Germany, Austria, and other countries. *The improved results obtained with diminished frequency of feeding have been fully confirmed by all who have adopted this method in this country.*"

The italics are not in the original and are used here merely to emphasise the extreme significance of the passages.

The fair trial of four-hourly feeding commenced years ago in the North-Western Infirmary at Chicago; the favourable conclusions there arrived at and the official leaflets which have since

been issued by the Public Health Department of the city, advising all mothers to use the longer intervals, afford significant confirmation of the soundness of what has become the general practice in Germany, Austria, and elsewhere. Surely the whole medical profession could now unhesitatingly go the length of advocating three-hourly feedings for the first few months and four-hourly afterwards. This has been done throughout New Zealand with the most beneficial results. I do not know of a single doctor or nurse who, having tried the longer feeding intervals, has failed to be impressed by the great advantages to both mother and child.

In the society's Baby Hospital at Dunedin hundreds of infants have been treated on these lines during the last four or five years, with more than satisfactory results. Further, the Plunket nurses (registered hospital nurses who have undergone a special course of extra training in the baby hospital in order to fit them to help in the rearing of many thousands of infants every year throughout New Zealand) have but one opinion in this matter. They all remark the contented restfulness of the babies and the gratification of the mothers themselves on being relieved of the irksome stress of having to resume suckling with scarcely more than an hour and a half of intermission. Many of our nurses had had prior experience of the ordinary routine practice of frequent feeding, and these women tell us they have no doubt whatever that mother and child are more comfortable and do better when the feeding intervals are extended and when there is no "night-feeding."

*2. The average quantitative food needs of the average baby during the first nine months.*

Here, again, the drawing up of specific tables is of quite recent and for the most part of empirical origin. However, while there has been almost complete unanimity and uniformity in error with regard to "frequency" of feeding, there has been every conceivable diversity of opinion, and of advice tendered, as to the most suitable forms and quantities of artificial foods for the average baby.

The tendency in England has been to ignore and even deprecate resorting to the more or less precise indications furnished by the making of caloric estimates, though this affords the only readily available scientific standard when preparing feeding tables, and would, as Professor O'Meara of Cornell University says, in his masterful summing up of the subject, alone suffice to save us from making the "ridiculous mistakes" so frequently met with in practice.

The diversity of the food-values of mixtures and allowances recommended in standard text-books, when taken out and contrasted on graphic charts, is very striking, but probably more harm is done by the multitude of well-intentioned popular books and pamphlets for mothers sent all over the world in tens and hundreds of thousands every year. Many of these have every appearance of being reliable guides. Take, for instance, one which I have beside me: it is for sale on all bookstalls, and must command an enormous circulation. This is one of a comprehensive series of booklets dealing with a great variety of important subjects, and written for the most part by men of note in various professions. The writer of this particular volume explains that she is both a university woman and a mother of several children. The food allowance recommended for a normal baby, entering its third week, is equivalent to only 3 ozs. of human milk a day—or less than a fifth of Nature's average. As the result of weighing before and after suckling for twenty-four hours several nurslings in their third week (babies born in a London slum area), I found that the average intake of mother's milk was a little more than a pint *per diem*—representing more than 400 calories, which corresponds to the German standard of needs, viz. 100 times the body weight expressed in kilogrammes, or, roughly, 50 times the body weight in pounds ( $50 \times 8\frac{3}{4} = 437\frac{1}{2}$  calories), whereas the total value of the food allowance above referred to would be at the outside 60 or 70 calories *per diem*. Similarly misleading tables and allowances appear from time to time in nursing journals and elsewhere, and are even to be found quoted as correct answers to examination questions. One cannot doubt that such grossly misleading advice is a serious direct factor in infant mortality, besides driving nurses and mothers to the use of patent foods, the proprietors of which are usually fairly careful not to recommend a starvation diet.

At the recent Congress on Infant Mortality, Dr. Eric Pritchard strongly opposed a suggestion made by several members (including the writer) that an approximate average feeding standard should be drawn up by the leading authorities present, with a view to securing more uniform and reliable advice for mothers. The ground of opposition was the alleged extreme variability of the food requirements of normal infants living under different climatic and other conditions. However, this argument was scarcely valid, seeing that the proposal was merely to replace the existing arbitrary and erroneous tables with more reliable instructions abreast



of present-day knowledge. Further, the contention that healthy nurslings in the poorer quarters of London differ extremely in their food intake and nutritive needs from infants living elsewhere in temperate climates is not borne out in my own experience. During a period of over four months I have had some thousands of weighings of babies before and after feeding, carefully made for whole periods of twenty-four consecutive hours, at first on several successive days and then at regular intervals. These weighings were done in the case of over fifty nurslings living in the poorest quarters of Bethnal Green and elsewhere, and they show that the nutritive needs of such children accord very closely with the average ascertained standards for New Zealand, Paris, Berlin, New York, and Boston.

3. *Breast-feeding and artificial feeding—the best forms of artificial food.*

In general, our profession has no doubt advocated breast-feeding, but during the eighties and nineties we know that suckling had come to be almost superseded in many quarters by artificial feeding, often with the acquiescence and too often on the advice of medical practitioners. Is any serious, widespread, concerted effort being made by the public or ourselves to dispel once and for all the mistaken notions of the past, to root out error and prejudice in these matters, and to instruct women of all classes in the fundamental hygienic requirements essential for healthy childbirth, care of breasts, milk supply, suckling, etc.? Of course, much has been done in the way of help for the very poor, by schools for mothers and other charitable agencies, but practically nothing has been attempted with a view to systematically educating, safeguarding, and helping the more capable, provident, receptive, and self-respecting four-fifths of the population. This applies equally to the New and Old World. In response to a question put to Dr. La Fetra of New York at the close of his excellent address given at the Congress in London in August 1913, he said:

“The vast number of the people (in the United States) in moderate circumstances have not yet been reached—that is a problem we have yet to work out. I am very glad to hear what has been done in New Zealand, and think we shall learn something of great value from the experience of that country.”

The vexed question of the best practically available baby foods is too complex, and the testimony on the subject is too conflicting,



to admit of its being discussed here. However, I may mention in passing that in New Zealand the society has all along advocated the modification of cow's milk on the simplest lines consistent with arriving at a reasonable approximation to human milk. This has proved so eminently successful that, where artificial feeding must be resorted to, modification on the lines recommended has been adopted throughout the whole country.

#### AIR, CLOTHING, EXERCISE, ETC.

If there has been lack of agreement throughout the civilised world as to the feeding of babies, the prevailing customs have certainly been no less conflicting in regard to fresh air, clothing, warmth, exercise, bodily restrictions, etc., and other simple factors which mainly determine the question of delicacy or hardness in infancy.

It appears to be more than a coincidence that the infantile death-rate increases so enormously as we travel eastwards in Europe—as the houses become more and more warm, stove-heated and stuffy, and as infant clothing is found to be more and more irrational and hampering. One cannot help feeling that there is a very close connection between these factors and the high death-rates of Germany and Austria.

The houses in Berlin and Vienna do not “breathe”; the temperature regarded as ideal in baby hospitals is 70° Fabr., and in Vienna the customary swaddling in home and hospital is practically the trussing up of the Florentine bambino. Dr. Ludwig Meyer's recent monograph on *Hospitalismus*, and what he and others say as to the virulent respiratory epidemics which keep sweeping through the German institutions for babies, simply suggest the ordinary results of excessive coddling. Nothing in this connection has struck me more forcibly than the marked contrast between the whole aspect and condition of infants, as one sees them treated on these lines, and what one finds where the conditions approximate to those of an open-air sanatorium, whether one is dealing with public institutions or with private houses.

Provided due care is taken in instructing mothers as to how the baby's bed is to be made, and how to avoid excessive draughts, we have found in New Zealand nothing but benefit from wide-open windows and pure cold air. The wards, not only of our baby hospital but of the St. Helen's Maternity Hospital, are unheated even in winter time, except for a few special cases.

Our whole effort is directed towards bringing about a high state of physical fitness of all classes throughout the whole country on simple natural lines.

#### ORIGIN AND GROWTH OF THE SOCIETY.

Nearly seven years ago the work was entered into with great spirit by a committee of twenty-five earnest women in Dunedin, drawn from all creeds and classes, who felt that a stand ought to be made for rational education, help, and training in the simple essentials for healthy, normal motherhood and babyhood.

Since then some seventy branches have been formed; these branches are presided over by local executive committees, numbering from fifteen to thirty members each, and embrace a very large, earnest, and influential membership roll, representative of the motherhood of the dominion. All creeds and classes are included. The members meet on grounds of common motherhood and humanity, without any trace or suggestion of patronage or charity.

The society has gradually come to be looked to by all classes, and by the Government itself, as exercising a very beneficent influence over the domestic aspect of the care and safeguarding of mother and child. The newspaper press of the whole country has played a leading rôle in the movement, offering every help and encouragement, endorsing and advocating the work, and publishing at the present time some 200,000 copies of a weekly article under the heading "Our Babies' Column," supplied by the society to fifty newspapers, and reaching practically every home in the dominion—penetrating, indeed, the remotest back-blocks, beyond the reach of doctor or nurse.

The society issues an illustrated text-book—*Feeding and Care of Baby* (now published in London by Macmillan & Co. at 1s.)—and the Public Health Department sends, without charge, to every mother, on the birth of her child, a pamphlet—*Baby's First Month*. Both these works were prepared by myself on consistent and harmonious lines, and thus no conflicting advice is given as to the simple hygienic essentials.

From first to last main attention has been directed to the essential requirements as regards fresh air, sunlight, cleanliness, proper feeding, exercise, rest, sleep, regular habits, etc., and how to attain these in any home in the simplest and best way. We spare no pains to train prospective mothers, well ahead, with a view to nursing. If the breast milk falls short, we show how to

prepare the best substitute—*always insisting that every drop of the mother's own milk is precious*. Mothers are taught how suitably to modify milk in their homes in the simplest way. Feeding of babies not more than six times a day at first, and after four months only five times, is strongly advocated, and no night-feeding. The wrongs done by the use of long tube feeders, "comforters," patent foods, condensed milk, etc., are illustrated, and always kept in view. The curse of "pap-feeding" and the need for hard dry food and training in mastication before the end of the first year and onwards are insisted on.

The following passage occurs in the instructions given to the Plunket nurses:—

"The society's work is essentially a health mission. In regard to domestic hygiene, its trained nurses, when called in to help, should take the place of untrained, unskilled neighbours or relations in as tactful a way as possible."

The relationship of the society's nurses to the medical profession is clearly defined. The nurses have nothing to do with the treatment of disease, except under medical instruction. Indeed, if a doctor is in attendance, the Plunket nurse is always required to get his sanction before acceding to a call from the mother, even though the information wanted is merely on the simplest point of domestic hygiene. Professional relationships have been properly safeguarded in all directions, and the result is that the services of the Plunket nurses are largely availed of by the doctors for patients of all classes, it being recognised that a competent nurse tends to ensure the intelligent carrying out of the doctor's instructions between his visits. Several of the leading professors in the university are on the advisory board of the central branch, and doctors and doctors' wives form a considerable proportion of the various local committees.

The work of the Plunket nurses is entirely apart from district nursing or the care of sick people. They devote themselves solely to the hygiene and helping of mother and child. The general Government grants a subsidy of 24s. for each £1 raised by voluntary subscription. The nurses receive £150 a year and expenses.

Besides visiting mothers, when asked, in their own homes, and being present at fixed times at the local "Plunket Rooms" ("Schools for Mothers," where expectant mothers are seen, and babies are weighed, and attended to) and organising talks for mothers, or for the committees, the society's nurses are available



for teaching in the schools—giving the girls simple practical lessons in “mothercraft” with the aid of a baby.

The society loses no opportunity for stimulating public interest in the essentials for the health of the home and family by means of popular illustrated lectures. These are given periodically by leading members of the medical profession on such vital questions as “The Saving of the Teeth,” “The Nature and Prevention of Adenoids,” etc., besides lectures on the universal essentials for hygiene (air, food, exercise, etc.).

I have not attempted to give any direct answer to the question why the smaller towns of Kent show double the infantile death-rate of Dunedin, but is there any reasonable doubt that a mutual, educative, patriotic “health mission” to mothers of all classes, similar to that instituted by the women of New Zealand, would prove equally helpful in England? Less than seven years ago the infantile death-rate of New Zealand was higher than that of the present Kentish rate.

#### NOTES ON THE TREATMENT AND CONTROL OF VENEREAL DISEASES.

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A SHORT course of study at a military hospital set aside for the treatment of venereal diseases prompts this contribution. It does not profess to be a dogmatic pronouncement on treatment. It is rather intended to indicate the lines followed in an institution where the most modern methods are adopted for dealing with cases of venereal diseases occurring in the Army. The treatment of venereal diseases has by no means reached finality. It has made enormous strides, mainly in the direction of curtailing the duration of active medication, and in adding to our knowledge of a complex subject.

One has to keep in mind that in a military hospital the conditions entirely favour systematic treatment, because discipline reigns supreme. That in itself is a factor of very great importance. Everything is done in a most methodical way, from the detailed examination of pathological conditions down to the transcription of these conditions by an orderly, who is an expert shorthand writer. From every sore examined a smear is taken, and a search made on the spot for the detection, under the



illuminated dark ground, of the *spirochata pallida*. If the spirochaetes cannot be found in the exudate from the sore, an enlarged gland in the neighbourhood of the sore may yield a positive result. One negative smear is not considered enough, two others being taken on successive days. That is three in all. It is held to be bad practice to wait for the result of the Wassermann reaction without first making full use of the microscope. The time lost in waiting for the appearance of secondaries may militate against successful treatment.

The search for the *spirochata pallida* must be carefully conducted, since the organism, with its peculiar lateral motion, is not so easily found as text-books would lead one to imagine.

The "606" remedies that have been more commonly employed at the military hospital under review are salvarsan, kharsivan, diarsenol, and arsenobenzol.

All these preparations are identical, and are mixed in the same fashion. They all demand neutralisation by means of a 4 per cent. solution of sodium hydrate, and all are intravenously administered. In preparing the drug for injection a good deal of trouble is entailed, and, generally speaking, only those who can give time to the matter will likely undertake the task.

By way of example, the solvent is specially prepared by adding 1 litre (1000 c.c.) of freshly distilled water to 10 c.c. of a normal solution of hydrochloric acid. An ampoule of salvarsan (0.6 gm.) is added to 50 c.c. of the solvent, and shaken up until all particles are dissolved. Then a stated amount of 4 per cent. sodium hydrate solution is added from a burette. A precipitate is formed, but this is dispelled by vigorous shaking. Finally, there comes the dilution of the remedy with the 6 per cent. saline solution. The drug is now ready for intravenous injection, and must never be used at a temperature above blood-heat. Further, the remedy must be used soon after it has been prepared.

Of the newer remedies known as "914" preparations the following are much favoured at the military hospital in question:—

- |                     |   |                          |
|---------------------|---|--------------------------|
| I. Neosalvarsan     | . | } Given intramuscularly. |
| II. Novarsenobillon | . |                          |
| III. Disodo-luargol | . | Given intravenously.     |

Since these preparations are easily made ready for administration by the practitioner, a more detailed procedure may be given.

The piston of a 10 c.c. Record syringe is removed and placed in distilled water. A cap is fitted on the nozzle end of the

barrel. Into the barrel pour 1 c.c. of cold distilled water. Next empty the contents of an ampoule of neosalvarsan or novarsenobillon into the barrel. This is dissolved by means of a small glass rod. When quite clear make up the barrel contents to 2 c.c. by adding creo. camph. (creosote and camphoric acid in palmitine having a melting-point of 15° C.). The creo. camph. is first melted in its glass receptacle by immersion in warm water. The piston is now carefully replaced, the cap attached to the nozzle of the barrel being removed, and all air expelled from the barrel. Replace the cap on the nozzle and shake the barrel contents to emulsify the mixture. Remove the cap, attach the needle, and proceed to inject into the gluteal region.

Before injection, the intended site of puncture and its vicinity are painted over with iodine. The site preferred for deep subcutaneous injection is the loose tissue overlying the gluteus medius, at a point two fingers'-breadth from the crest of the ilium on a line drawn from the tuber ischii to the iliac crest. Vertically this is above the great trochanter. The object aimed at must be injection over the fascia and neither into the muscle nor into the fat overlying the fascia. The injection itself is performed by suddenly stabbing the needle almost up to its hilt into the gluteal region, and subsequently attaching the nozzle of the syringe to the deeply embedded needle.

Prior to the deep injection a hypodermic dose,  $\frac{1}{6}$  gr. or  $\frac{1}{4}$  gr. of morphia is subcutaneously administered to relieve the pain caused by the substance injected deeply into the buttock. In a short time the local analgesic influence of creo. camph. begins to exert itself. To dissipate the "914" preparation the parts overlying the injection are always firmly massaged for a few moments with a soft pad.

Disodo-luargol, given intravenously, is more easily prepared than the "606" remedies. The ampoule contents are dissolved in cold distilled water at the rate of 10 c.c. of aq. destill. to 0.1 gm. of disodo-luargol. For example, take one 0.3-gm. ampoule and dissolve the contents in 30 c.c. of distilled water. Stir with a glass rod until all particles are dissolved. The drug is then ready for administration. This preparation does not require to be neutralised. Even if kept for short periods, oxidation is liable to take place. The solution must therefore be used immediately after it has been prepared.

Neosalvarsan or novarsenobillon may also be given intravenously and in a simpler form than the highly diluted "606"

remedies. This is how they may be conveniently prepared for intravenous injection.

Measure out 10 c.c. of cold distilled water into a sterile crucible (capacity about 20 c.c.). Empty an 0.45-gram. ampoule of "914" into the water, and dissolve with the aid of a glass rod. When quite clear, take a sterile 10 c.c. Record syringe, draw up the solution, attach a needle, and inject the dose into the selected vein. The intervals between the administrations of "914" preparations are the same as those of "606" remedies, but the dosages differ. Thus, instead of 0.3 gram. salvarsan, one gives 0.45 gram. neo; 0.4 gram. salvarsan is changed to 0.6 gram. neo; and instead of 0.5 gram. salvarsan use 0.75 gram. neo.

In hospital practice it is usual to give the mercurial cream in the forenoon and the "606" or "914" in the afternoon. In private practice this may not be possible to arrange. There is no reason against administering the "606" or "914" and the mercury within a few minutes of one another in opposite buttocks.

*Caution.*—During the injection of "606" or "914" remedies it is always the practice to have ready a hypodermic syringe charged with  $\mathfrak{m}$  x. of liq. adrenalin hyd. B.P., since the administration of this drug is most invaluable in counteracting vasodilator manifestations. Adrenalin quickly dispels the cyanosis, and after the elapse of five minutes the intravenous injection, temporarily cut off, may be resumed. In the case of fainting during salvarsan injections,  $\mathfrak{m}$  vii. of liq. strychninae hyd. are hypodermically injected. Before injections are administered the patient must have his bowels cleared, and must omit the meal prior to the time of injection. After injection he should rest a little (if treated as an out-patient), and should refrain from taking part in any exciting activity for the rest of that day.

One occasionally hears it said that after a few doses of salvarsan or allied preparation a cure may be expected. Unfortunately this idea has impressed the lay mind to an undue extent, and sufferers coming to the writer for advice have been astonished to learn that such a prolonged course as that about to be detailed is really necessary.

At the military hospital visited a course of mercurial cream injection invariably accompanies one of "606" or "914" treatment. One ventures to state that such a feature in successful treatment is not sufficiently recognised. The combination is known as "The Intensive Method."



In the subjoined table a complete course of "606" medication is given as actually practised upon at least forty and fifty patients daily, the course being combined with intramuscular injections of mercurial cream.

*A Course of Salvarsan or its Equivalent, Combined with Mercury (Intensive Treatment).*

Day.	Dose of "606" Prepara- tion in grms.		Dose of Mercurial Cream in grs.
1st . . . . .	0.3	Intravenously.	1
4th . . . . .	0.3		None given
8th . . . . .	0.3		1
15th . . . . .	None given		1
22nd . . . . .	0.4		1
29th . . . . .	0.5		1
36th . . . . .	None given		1
43rd . . . . .	0.5		1
50th . . . . .	0.5		1

given for fourteen days along with a modified course of 0.3 grm., 0.4 grm., 0.5 grm. salvarsan, or other "606" preparation, together with intramuscular injections of mercurial cream (gr. i.) at weekly intervals for three weeks. If the Wassermann be still positive, the patient is placed upon chronic mercurial treatment, consisting of K.I. and pil. hydrarg. c. cret. (grs. ii.) for a period of three months. The pills are taken as follows:—One a day for one week, two a day for another week, and three a day for four weeks. The above course is repeated *twice*, with one week's rest between each course.

It has to be kept in mind that during the exhibition of mercury intramuscularly, or by the mouth, the condition of the teeth and gums must be constantly kept under careful observation. In the Army this is found specially necessary, because dentition is not always satisfactory. The state of the gums must therefore regulate the dosage of mercury.

Bleeders and sufferers from Addison's disease afford absolute contra-indication to the administration of the arsenical preparations. Modifications, in the direction of reduced dosage, must be made in the cases of gummata of the brain, aortic aneurysm, severe visceral disease, and septic conditions accompanied by fever. The main idea, in these circumstances, is to begin the dosage of "606" cautiously, always keeping in mind that as much of the remedy should be given as possible. In other words, the dosage outlined in the first table should, other things being equal, be as closely followed as possible.



In albuminuria the doses begin at 0·2 or 0·3 grm., according to the severity of the albuminuria. Generally speaking, the urine clears up after the first or second injection. If the quantity of albumen does not vary, the dose is maintained at the uniform level of 0·3 or 0·4 grm.

Arsenical intolerance may occasionally manifest itself. Under such circumstances "606" or "914" must be carefully given. Urticaria affecting the whole body surface, jaundice, and exfoliative dermatitis may forbid the continuance of arsenical preparations. Generally, a temporary suspension, followed by a resumption of the drug, does not produce a return of the earlier manifestations.

While the intravenous administration of "606" or "914" remedies can lay claim to quick effects, their influence is not so lasting as in the case of intramuscular medication. In short, the one dissipates quickly into the blood-stream, while the other is slowly absorbed and maintains a more constant and steady influence upon any spirochaetes that may escape the sudden onslaught of the preparation pumped directly into the blood. The foregoing line of reasoning has led to the combination of the intravenous and intramuscular exhibition of arsenical and mercurial preparations—a system, as has been indicated, that has come to be recognised as "Intensive Treatment."

*Treatment by "914" Preparations, Combined with Mercury.*—A great advantage possessed by these newer preparations is that they may appeal more to the general practitioner, because they are simpler to prepare and are more easily administered than "606" remedies.

*A Course of Neosalvarsan or Allied "914" Preparation,  
Combined with Hg (both Administered Intramuscularly).*

Day.	Dose of "914" in grms.	Dose of Hg in grs.
1st . . . . .	0·6	gr. i.
8th . . . . .	0·6	"
15th . . . . .	0·6	"
22nd . . . . .	0·6	"
29th . . . . .	0·6	"
36th . . . . .	0·75	"
43rd . . . . .	0·9	"

45th. *Wassermann Test.*—If positive, continue treatment for three more weeks at weekly intervals, 0·6 grm, as above, with Hg gr. i. ; and if still positive at the end of the course, place the patient on chronic mercurial treatment as already outlined.

## GENERAL REMARKS.

Intravenous injections regularly and continually performed on large numbers of patients become comparatively easy. But the needles employed are not the delicate things one handles in connection with either Record or hypodermic syringes. One therefore finds occasional difficulty in entering the lumen of those veins that, despite the use of a tourniquet, fail to stand out prominently. Fine needles might be employed, but when intravenous injections have to be given to thirty or forty men during an afternoon the time occupied becomes a serious consideration. As it is, the rate of flow through the "coarse" needle is slow. The administration of full doses, amounting to 150 and 180 c.c. of fluid, with another 50 c.c. of saline, monopolises a considerable space of time.

When intravenous injections are being given, the procedure is to pass some saline solution into the punctured vein prior to the passage of "606." This clears the lumen of the needle. Subsequent to the administration of the salvarsan preparation, 50 c.c. of saline are run into the vein. The object of the saline is to prevent local irritation and to avoid thrombosis. As can be understood, the saline flows from a separate container, but is connected up by a Y (glass) piece to the tubing, along which the salvarsan passes.

*The Wassermann Reaction.*—Blood for this test, which can be demonstrated fifteen days after the first appearance of the primary sore, is taken from the median basilic vein. Fluid may also be removed from the spine by lumbar puncture for the same object. Any other method of abstracting blood may be employed, but it is slower than the practice of venesection.

Just as finality has not yet been reached in treatment, so it may be urged that we have not yet heard the last word about the Wassermann test. Until we command a standardised method, and are agreed upon some standard, we shall suffer from a lack of uniformity in accurate diagnosis and prognosis. As matters presently stand, no two authorities agree as to the real meaning of the result of the Wassermann reaction. This may read like rank heterodoxy; it is nevertheless the stated opinion of recognised military authorities who are in a particularly favourable position, from the point of view of practical experience, to offer sound judgments. The fallibility of the test is not called in question, though some conditions, apart from syphilis, have given response to the Wassermann test.

Much depends upon technique, not only in preparing the Wassermann elements, but also in the application of the test. If, therefore, technique varies in different centres, the interpretations of the test will not convey the same meaning. No one can deny the logic of such reasoning. Some authorities base their opinions upon highly sensitive reactions; others again prefer to ignore these sensitive responses. All these discussions are doubtless of great interest to the pathologist and bacteriologist, but they leave the clinician groping for a definite standard. It is expected that a pronouncement may soon be given on this debated subject.

When dealing with *suppurating buboes* the practice now is to aspirate pus and to replace this with almost the same quantity of iodoform and glycerine. This avoids surgical interference, and avoids lengthy treatment with dressings.

*Gonorrhœa*.—Too much space has already been occupied to permit one to say much on this subject. Irrigation with a solution of permanganate of potassium twice daily is the standard treatment. In acute cases the patient is kept in bed for some days and is given milk diet. Later, and especially in the case of chronic cases, the urethroscope is employed, and inflamed follicles touched with silver nitrate. Strictures are treated by ionisation with varying results.

### CONCLUSION.

When we begin to survey the other side of the picture as represented by administrative control, the conclusion forced upon one is that notification of the diseases coming under the name of venereal disorders must soon be approached. We have tuberculosis as a striking object and guide. Treatment came first, and that was followed by notification. Now we are beginning to realise that the disease must be dealt with at its place of origin—the home.

In a sense the arrest of venereal diseases should be more easy of accomplishment than that of tuberculosis. Many causes and agents contribute towards the spread of tuberculosis, whereas practically only one aids and abets the continuance of venereal diseases. A stigma is attached to the victim of syphilis or gonorrhœa. It is that odium which presently bars the way to notification and effective administrative control. The quack is now under observation, but many sufferers still seek advice at the chemist's shop. By way of illustration take the case of a man who seeks a cure for a discharge from his penis. He receives an



appropriate remedy. The results vary, according to circumstances. A balanitis may conceal a hard sore, which in process of time heals. The discharge has ceased, it may be true, but the spirochaetes are left to have their sway. Phagocytosis may, in certain robust individuals, defeat the encroachments of the specific spirochaetes, but many cases of commencing syphilis escape notice because inadequate and unskilled treatment had been accepted.

Generally speaking, the vast majority of our soldiers and sailors are being effectually treated. Few matters are so thoroughly dealt with in the Army and Navy as venereal diseases.

In the Mercantile Marine too much dependence is still placed upon unqualified practice for the treatment of venereal complaints. Illustrations of this are frequently afforded. This at once suggests a systematic medical inspection of ships' crews. But unless this inspection is conducted in foreign as well as in home ports the desired results cannot be achieved.

But what of the infected female? She remains at large to disseminate the disease. As long as that state of affairs continues, treatment of the male alone will not provide a complete remedy.

The writer quite recognises that he is beating about the edges of a burning bush. Yet, look whichever way you will for a method of arrest, you are forced to the conclusion that compulsory notification offers the best solution. The question is a serious one and must be viewed from that standpoint. If we come across comparatively few cases in our daily work the conclusion must not be arrived at that the prevalence of the scourge has been exaggerated. The military and naval hospitals prove the contrary, and if so many males are being treated, one is left to imagine how many infecting agents are abroad in our midst.

Voluntary notification has invariably broken down in administrative practice. It is, therefore, needless to advocate such a step. Compulsory notification may present difficulties. It is none the less a subject that demands very serious consideration at the present juncture. The Local Government Boards have proved their earnestness in the matter by offering most liberally proportioned grants towards the curative aspect of venereal diseases. It only requires a further push to introduce compulsory notification.

The foregoing opinion regarding notification is given with the full knowledge that notification is not looked upon in a favourable light at the present time. But, if venereal diseases are a serious menace to the manhood and future generation of this country, one cannot avoid the feeling that the scourge must be firmly gripped.



To the administrative officer, left in the dark as to the real condition of affairs, the present lack of control is disquieting and puzzling. Why withhold the truth from the citizen? It suggests cowardice on our part when we talk of the horrors of syphilis and allied disorders with bated breath and behind closed doors. If the truth is to be made known, out with it. If it is a disease that ought to be put down, then let us proceed to prevent it by every available means in our power. The Local Government Board has apparently grasped the seriousness of the problem, otherwise it would not have promised to pay the big proportion of 75 per cent. of costs incurred by a sanitary authority in combating venereal diseases.

Meantime we are at sixes and sevens. We are left to surmise too much. Only at special military and civil hospitals do they know to what extent venereal diseases prevail. Even the chemist has better knowledge of numbers than the individual who has the power available for taking steps to prevent the spread of the maladies that are now said to be rampant in our midst.

So far we have only reached the stage of discussing whether the preventive method of fighting venereal diseases is a good procedure or a bad one. The preventive method, put in a nutshell, implies the supply of prophylactics. Among the troops possessing prophylactic outfits, the proportion of venereal infection is much lighter than among those unprotected by defensive weapons. The outfit given to each soldier in a certain unit consists of five capsules of calomel ointment, five 2-gr. tablets of pot. permanganates, and five sheaths—full instructions being enclosed with each packet.

A well-known authority, competent to speak on the problem after fifteen years' experience, has strongly urged the necessity for the systematic medical inspection of women in brothels. But no action has been taken. Yet this authority is able to adduce the following indictment and noteworthy example of *laissez faire* policy:—"Daily and nightly the districts were crowded with thousands of men in khaki. Outside the more noted brothels long queues of soldiers waited their turn." But the authorities continued to look on, while the military hospitals were kept busy with "606," "914," and mercurial administration. Against that let me quote the opinion of medical men who hold diametrically opposed views. One says: "Can anyone conceive of a more disgusting and degrading occupation for a doctor than that of inspecting prostitutes to ascertain if they are in a fit state to ply

their trade, or of giving systematic instruction to young men in the use of preventives?" The fallacy there is so obvious that one need not attempt to debate it. The other medical man, whom I shall take as a model of perspective, says: "Morals have no place in pathology, and the moral aspect of the question does not concern medical men, whose sole business is to prevent and cure disease."

While it may be going too far to suggest that morals have no concern for the physician, the latter part of the pronouncement quoted is the sound and correct attitude for the profession to adopt at the present juncture. If any steps can be taken to educate the people, these steps should immediately be adopted.

If calomel cream can avert an invasion of the spirochæta pallida or the gonococcus, employment of the medicament should be universal. In fact, every procedure that can eradicate and prevent venereal diseases should be fully employed. Sentiment has only an ethical bearing on the problem. Sentimental considerations do not always mean practical common sense.

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Since the foregoing was written the author has been able to procure the July number of the *Quarterly Journal of Medicine* (Clarendon Press). Anyone directly interested in the subject of venereal diseases will find a most exhaustive review of the whole problem of treatment in this journal by Lieutenant-Colonel Harrison.

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## THE MOVEMENTS OF THE SACRO-ILIAC JOINTS: A CLINICAL STUDY.

By EDGAR F. CYRIAX, M.D.(Edin.), London.

ANATOMISTS are still at variance as regards the nature and the amount, if any, of movements normally present in the sacro-iliac joints. Some state definitely that there are none, and that the joints are practically immovable. Others consider that rotary and gliding movements through quite a considerable range are normally present. The evidence in favour of these latter views is to my mind not conclusive. Some of it has been drawn from observations on the cadaver, but here all the joints are in a state of much greater relaxation than in the living subject. Other evidence has been drawn from the examination of the joints during the later stages of pregnancy, specially on the operating table under narcosis; here, also, the joints are in a state of temporary relaxation.

In order to try and settle the question, which is of importance,

not so much perhaps from the pure anatomical but from the orthopaedic point of view, I have made a series of observations to test for the presence of movements in the sacro-iliac joints—(1) In normal subjects. (2) During pregnancy. (3) In cases of subluxated ilium. (4) In cases of chronic relaxation of the joints. (5) In cases of compensatory movements of the joints—and herewith give the results.

The movements were tested for in the following ways:—

(a) With the subject on his (or her) back in the semi-recumbent position, one hand was placed above the anterior superior spine of one side and the other hand below the corresponding point of the opposite side. Then one hand was depressed at the same time as the other was elevated, thereby attempting to move one ilium downwards and the other upwards, thus testing for the presence of rotary movement in both joints at the same time.

(b) With the subject on his side, the uppermost ilium was grasped by placing one hand over the anterior superior spine and the other over the posterior portion of the ilium or the tuber ischii. The anterior hand was moved forwards and downwards and the posterior hand upwards and slightly backwards, and the reverse, thus testing for rotary movements of the one ilium (the upper).

(c) With the subject as in (b), and with the same grip of the ilium, attempts were made to move the whole ilium *en masse* upwards and downwards, or forwards and backwards, thus testing for gliding movements of the one ilium in these directions.

The results of these tests are as follows:—

1. *In Normal Subjects.*—In young subjects, specially in females, a slight amount of rotary “give” in the joints may be obtained, but I have never succeeded in finding actual rotary or gliding movements. The amount of “give” is very small, and is, in my opinion, due to the natural flexibility of the joint cartilage. As soon as the pressure of the hands is released, the bones resume their former position. The amount of “give” obtainable diminishes as age advances, so that after the age of 30 it is generally a negligible quantity.

2. *During Pregnancy.*—During the later stages of pregnancy, on applying the tests mentioned, although a greater amount of “give” is obtained than in non-pregnant subjects, I have never seen actual rotary or gliding movements.

3. *In Cases of Subluxated Ilium.*—Slight displacements of one



ilium\* are common, specially in females. In the vast majority of cases they are set up by a sudden strain or blow when the muscles around the joint are in a state of relaxation, particularly in enfeebled subjects; this is in analogy with displacements elsewhere. Such subluxations are nearly always malrotations, though with excessive violence actual glidings *en masse* may be produced.

In these malrotations the most obvious sign is a difference in the level of the two anterior superior spines; differences of half an inch are frequent, of 1 in. are not uncommon; even 2 ins. may occur.

Attempts to estimate the amount of malrotation can be approximately made if it be assumed, as I think may safely be done in many of these cases, that the centre of the malrotation is practically in the centre of the joint. On this assumption, in an adult a difference of half an inch means a malrotation through about  $5^{\circ}$ , of 1 in. about  $10^{\circ}$ , and of 2 ins. about  $20^{\circ}$ . A greater amount than  $20^{\circ}$  can hardly occur without inducing the severest symptoms, *i.e.* it would have to be classed as a dislocation. Attempts to estimate the amount of movement *en masse* (gliding) are much less satisfactory, because pure glidings hardly ever occur; they are nearly always combined with malrotation. I consider, however, that a quarter of an inch of movement *en masse* is the limit without causing damage to the sacro-iliac joint; even half that amount will often produce severe symptoms.

On testing for movements in the manner described above, the only ones that may be induced are those of complete or partial reposition. When these have taken place, movements of equal intensity in the opposite direction, as if to reproduce the displacement, do not do so. Once replaced, the ilium tends to remain in correct position, unless one is dealing with such conditions as scoliosis, actual shortening of one leg, etc., in which case the subluxations may be reproduced, but slowly, taking from one to several days. If the scoliosis can be cured, or the actual shortening be removed by wearing a thicker sole, etc., then the displacements do not tend to be reproduced.

The comparative ease with which subluxations of the ilium can be produced, and the entire freedom from symptoms in many mild cases thereof, lead one to suppose that the sacro-iliac joints are so constructed that when their muscles and ligaments are relaxed, movements can take place which are not normally present. The fact that the joint has a synovial membrane, and, generally

\* For further details, see Cyriax, *Practitioner*, 1916, xcvii. 464-471.



speaking, is constructed like a movable joint, is evidence in favour of this. In this respect these joints are like many others, such as the knee, in which lateral flexion and lateral movement *en masse* can be passively obtained when the joint is relaxed, etc.

4. *In Cases of Chronic Relaxation of the Joints.*—From time to time one meets with cases, such as in infantile paralysis, where the joints, presumably as the result of muscular weakness, are in a state of chronic relaxation, and where the tests mentioned may elicit actual rotary movements, though I have never seen gliding ones. If the weakness of the muscles can be removed by systematic medico-gymnastic treatment, these joint movements tend to diminish or disappear. This would not be the result were they normally present.

5. *In Cases of Compensatory Movements of the Joints.*—There are sometimes found in cases of long standing severe conditions of the hip-joint which have caused partial or complete ankylosis thereof. These compensatory movements, however, differ from normal, inasmuch as they are only acquired after a long space of time; they are laboured and generally accompanied by coarse grating sounds, etc., which tend to show that they are pathological in origin.

The conclusions to which I have come are as follows:—

(a) The sacro-iliac joints under normal conditions permit of no actual rotary or gliding movements.

(b) The sacro-iliac joints in early life are not very firmly fixed, and if taken unawares can permit of pathological rotation, and to a less extent of pathological gliding movements, resulting in persistent displacements and fixation of the iliac.

(c) The presence of actual movements of rotation or gliding at the sacro-iliac joints points to pathological states thereof.

## THE DOCTORS IN JANE AUSTEN'S NOVELS.

By J. BARFIELD ADAMS, L.R.C.P., L.R.C.S.,

Member of the Medico-Psychological Association.

THE 18th of last July was the centenary of the death of the authoress of *Pride and Prejudice*. In the morning a wreath of roses was placed upon the grave at Winchester, and later in the day a memorial tablet was unveiled at Chawton, the little Hampshire village where Miss Austen's last years were spent. Among those gathered to witness the ceremony of the unveiling were great-great-nephews and great-great-nieces of the novelist.

and the number of her admirers present would undoubtedly have been greater had it not been for the awful war which was raging at the time, and which had drawn into its vortex many of the noblest in the worlds of literature and art.

It is a singular coincidence that Miss Austen's peaceful stories—as peaceful as the landscapes of Constable or Corot—should have been written during the years that England was waging a life and death struggle with the great Napoleon, and that the first centenary of her death should find a greater England engaged in a more terrible conflict with a physically mightier and morally far more detestable and more unscrupulous foe than the ambitious Corsican. While the gentle authoress was writing her novels, the English guns were thundering in the Baltic and at the mouth of the Nile, were thundering on the bloody fields of Spain and on the bloodier field of Waterloo; a hundred years later, when her admirers paid their homage at the writer's tomb, the mightier guns of a mightier England, now grown to a great commonwealth of free nations, were again thundering, and had been thundering for many months, in Flanders, in Egypt, and in the valley of the Tigris, and the roar of the cannon of British ships had been heard in all the Seven Seas.

Miss Austen's novels are pastorals redolent of country life. We go, indeed, once or twice to London, but the people we go with are country folk, and bring with them the good smell of the country. It is the same at Bath, where we taste a little mild dissipation, and at Lyme Regis, where we get a breath of sea air. But our companions are always the same—the sons and daughters of landed squires, of knights of the shire, and of well-beneficed country clergymen. The plots of the stories always turn on some gentle love affair; and for scenery we have the drawing-rooms of country houses, the ballrooms of Bath, and the parks and park-like country of southern England. Yet among all these scenes of peace there are echoes of war. Jane Fairfax's father, a lieutenant in a regiment of infantry, was killed in action, and in *Persuasion* we hear tales of naval battles, and of the capture of prizes which meant wealth and fortune to the officers and crews of British ships.

The cult of Jane Austen is limited but intense, and her admirers so passionately resent criticism of her works that a humble reader feels he is treading on delicate ground when he suggests that there may be defects in the novels. And there are defects. Miss Austen was by no means so gifted with psycho-

logical insight as some of her worshippers would have us believe. She could not draw a man; she could not draw a mother; she could not draw a child. Her men are always wooden, and sometimes impossible; her mothers are silly caricatures; and her children are mere puppets. Her great success is in the delineation of the characters of young women between the ages of seventeen and twenty-seven. She dissects their characters with a keen and skilful scalpel. She reveals their charms, their thoughts, their secret wishes, and their ideals; and her irony, which is often clumsy when turned upon thick-headed young men and boorish parsons, and is stupid when applied to mothers, plays with marvellous delicacy about the foibles and follies of her youthful heroines and their friends. Reading Jane Austen's novels is like watching the performance of a drama, the *roles* of which, both male and female, are played by clever girls; the younger female characters are admirably acted—acted to the life; but the male characters and those of the older women are either exaggerations or failures.

Our novelist has also another fault. Like some otherwise excellent painters, she fails in rendering the effect of distance. She has no middle distance. Her principal characters move in the full glare of the footlights, but her secondary personages are too far in the background. The latter do not sufficiently support the former. There is not enough connection between them. There are none of those gradations which one meets with in real life.

The doctors in these novels suffer from this faulty perspective. In these charming pictures of the home life of the early nineteenth century one expects to meet the doctor, and to learn something about him and his circumstances, but somehow or other one is disappointed. One hears of him, feels his influence, but one rarely meets him face to face.

There is Mr. Jones, the apothecary, who attended Miss Jane Bennet when she was taken ill at the Bingleys' house; one would like to know more about him. This gentleman practised in Meryton, a market town in Hertfordshire. It is to be noted that all the medical men in these novels with one exception, that of the surgeon who was called in when Louisa Musgrove met with an accident at Lyme Regis, are apothecaries. We hear of physicians and we are threatened with them, but they never put in an appearance. Mr. Jones appears to have been a skilful practitioner. Miss Bennet did very well in his hands, and although the young lady's acquaintances were anxious for a second opinion, her own



relations were quite satisfied with Mr. Jones. It is always outsiders, who have not got to pay the fee, who agitate for further advice.

No doubt Mr. Jones was discretion itself, but his shop-boy—the young gentleman who washed the bottles, rolled out the pills, and took the medicines round to the patients—was not. He gossiped. And when you wanted to know what was the matter with any of Mr. Jones' patients, or how they were getting on, or anything else about them, you simply stepped into the apothecary's shop and asked the boy. This is what Mrs. Philips, the lawyer's wife, did when she wanted to know whether the Miss Bennets were still staying with the Bingleys. Or rather she had not to go as far as the shop; she met the young gentleman in the street with his basket of medicines on his arm, and she questioned him straight away. The apothecary's boy assured her that he knew that the young ladies had gone home, because no more draughts were to be sent up to Netherfield, the Bingleys' residence.

But if Mr. Jones was accustomed to hold his tongue about his patients' affairs, we cannot say that Mr. Donovan, a London practitioner, was as careful. Once, when he was called in to attend Mrs. Palmer's baby, which was suffering from red gum—poor little kid! it was all over pimples, and frightened its mother nearly to death—he was decidedly indiscreet. He had just been to a case of hysteria due to some family unpleasantness. Mrs. Palmer and her mother, Mrs. Jennings, who happened to be present when the doctor came to see the baby, were acquainted with his previous patient. The grandmother, an inveterate old gossip, asked Mr. Donovan, as he was going away, whether there was any news. Upon that he smirked, and simpered, and looked grave, and seemed to know something or other, and at last he said in a whisper, "For fear any unpleasant report should reach the young ladies under your care"—Elinor and Marianne Dashwood were staying with Mrs. Jennings at the time—"as to their sister's indisposition, I think it advisable to say that I believe there is no great reason for alarm; I hope Mrs. Dashwood will do very well."

Naturally, these remarks stimulated Mrs. Jennings' appetite for information. She wanted to know more, and Mr. Donovan did not require much coaxing to blurt out the whole story.

Certainly medical ethics have made tremendous strides during the last hundred years. No general practitioner of the present



day would be guilty of such indiscretion. Perhaps it is because we have shut up the apothecaries' shops.

Mr. Harris was a man of an entirely different type. He lived in the country, and probably had an excellent practice, for he was of a most buoyant disposition, and his manner gave confidence not only to the patient but also to the patient's friends. Sick folk do not like a doctor who is always looking on the black side of things. Mr. Harris attended Marianne Dashwood when she was taken ill at Mrs. Palmer's house in Somersetshire—Miss Austen's heroines seem to have had a most disagreeable habit of being seized with indisposition when visiting their friends.

The patient's symptoms were fever, pains in the limbs, cough, and sore throat. When the doctor saw her he pronounced the disorder to have a "putrid tendency," and he inadvertently allowed the word "infection" to pass his lips. This was enough for Mrs. Palmer. Within an hour of Mr. Harris' visit she had hurried off with her baby—it was the same baby that had suffered from red gum in London—to the house of a relative some distance away—some miles in fact on the other side of Bath—leaving her sick guest to the care of her other visitors. It seemed unkind, but I am not sure, considering what we know of Charlotte Palmer, that she did not do the very best thing, not only for her baby but also for her guest, by going away.

Miss Marianne Dashwood's illness was a prolonged and very anxious affair, and put the doctor's skill to the test. But his hopefulness rose victorious over every difficulty, though possibly he may have had private doubts as to the termination of the case, for he was only too glad to send for the patient's mother from Devonshire when the malady was at its height. Every time he changed the treatment he was confident in the efficacy of his new remedies, and when they failed, his disappointment was drowned in the certainty that the new methods, which he was about to employ, would be successful. There was no end to his resources, and, finally, either as the result of his remarkable skill or because of her own excellent constitution, his charming patient was restored to health.

We certainly would have liked to have heard more about this able practitioner and his methods of treatment, but the novel furnishes us with no further information concerning him. Let us pass on to Mr. Perry, the apothecary, who practised in Highbury, a large and populous village in Surrey about twelve miles from London. We always feel sorry that we were not given the oppor-

tunity of making the personal acquaintance of this gentleman. He was very popular, and was no doubt a very excellent doctor. We are constantly hearing of him; everybody speaks of him, and his opinions are quoted on all sides, but we never meet him face to face. Once we saw him riding down the village street, but he was out of sight before we could have a good look at him.

We hear a good deal about his wife and children, and also little details of his daily life. For instance, we know that he made his rounds on horseback. All country practitioners at that time who could afford a horse, did so. We also know that he had thoughts of setting up a carriage. "Mrs. Perry had told somebody and was extremely happy about it. It was owing to her persuasion, as she thought his being out in bad weather did him a great deal of harm." The project was very much talked about, and all the doctor's patients and friends—and the terms in his case are synonymous—were delighted.

"What is this about Perry and a carriage?" asked one.

"Is Perry going to set up a carriage? I am glad he can afford it," said another.

Really, it is greatly to be regretted that we do not know the good man personally. It is all due to Miss Austen's habit of keeping her secondary characters so much in the background.

Mr. Perry attended all the best families in Highbury and the neighbourhood. He attended Mr. Woodhouse, the rich old gentleman at Hartfield, the big house just outside the village; the Westons at Randalls, another big house a little further on; the Knightleys at Donwell Abbey in the next parish; the Martins, that well-to-do farmer's family, you know, at Abbey-Mill farm—Robert Martin rented the farm from Mr. Knightley; Mr. Elton, the vicar of Highbury; old Mrs. Bates, the widow of the late vicar; Mrs. Goddard, the mistress of the Highbury School for Young Ladies—a school, you understand, not a seminary, nor an establishment—Mrs. Goddard was very particular on that point; and the Coles and the Coxes—all wealthy people, or at any rate people who were very comfortably off, with the exception of poor old Mrs. Bates, and possibly of Mrs. Goddard. Oh, yes; Perry had by far the best practice in the neighbourhood.

Old Mr. Woodhouse, our friend's most important patient, was a bit of a hypochondriac, and, like many such, he was always bothering about his stomach, and what he could and what he could not eat. Nowadays such people buy all their food at the chemist's shop, instead of going to the butcher, the baker, and the green-

grocer. They eat nothing but Mr. Somebody-or-other's whole-meal pancakes, and certain ungodly German preparations which combine, they innocently suppose, the virtues of food and physic. Poor Mr. Woodhouse had no such advantages. At one time he had struck so many things out of his dietary that he was reduced to a "small basin of thin gruel."

When his daughter's governess, who became the wife of Mr. Weston of Randalls, was married from his house, the wedding-cake was a matter of great distress to him. "His own stomach could bear nothing rich, and he could never believe other people to be different from himself. What was unwholesome to him he regarded as unfit for anybody; and he had, therefore, earnestly tried to dissuade them from having any wedding-cake at all, and when that proved vain, as earnestly tried to prevent anybody's eating it. He had been at the pains of consulting Mr. Perry, the apothecary, on the subject. Mr. Perry was an intelligent, gentlemanlike man, whose frequent visits were one of the comforts of Mr. Woodhouse's life; and upon being applied to, he could not but acknowledge (though it seemed rather against the bias of inclination) that wedding-cake might certainly disagree with many—perhaps with most people—unless taken moderately. With such an opinion, in confirmation of his own, Mr. Woodhouse hoped to influence every visitor of the newly married pair; but still the cake was eaten; and there was no rest for his benevolent nerves till it was all gone.

"There was a strange rumour in Highbury of all the little Perrys being seen with a slice of Mrs. Weston's wedding-cake in their hands; but Mr. Woodhouse would never believe it." If it were true—mind, I do not say it was—but if it were true, it certainly seemed a bit of inconsistency on the part of the doctor. But perhaps it was Mrs. Perry who was to blame. Even doctors are not always masters in their own houses.

Mr. Woodhouse had not only the greatest confidence in his medical attendant, but he took a kindly interest in that gentleman's well-being.

"Oh, good Mr. Perry, how is he, sir?" he was asked one day.

"Why, pretty well, but not quite well," replied Mr. Woodhouse. "Poor Perry is bilious, and he has not time to take care of himself; he tells me he has not time to take care of himself, which is very sad; but he is always wanted all round the country. I suppose there is not a man in such practice anywhere. But then there is not so clever a man anywhere."



Mr. Woodhouse's married daughter, Mrs. John Knightley—her husband was the brother of Mr. Knightley of Donwell Abbey—lived in London, and her medical attendant was a certain Mr. Wingfield, in whom she had as profound a confidence as her father had in Mr. Perry. When Mrs. Knightley visited her father, wordy battles—mere storms in a teacup, it is true, though there was considerable rattling of the teaspoons—often took place between them on the subject of the merits of their respective doctors, and the professional opinions, and even the *obiter dicta*, of these gentlemen were shuttlecocked between the two antagonists with persistent obstinacy.

One year the Knightleys had taken their children to the seaside for a holiday instead of coming as usual to Highbury, a proceeding which did not altogether meet with Mr. Woodhouse's approval, nor, according to him, with that of Mr. Perry.

"It was an awkward business, my dear," began Mr. Woodhouse, "your spending the autumn at South End instead of coming here. I never had much opinion of the sea air."

"Mr. Wingfield most strenuously recommended it, sir," replied Mrs. Knightley, "or we should not have gone. He recommended it for all the children, but particularly for the weakness in little Bella's throat—both sea air and bathing."

"Ah, my dear, but Perry had many doubts about the sea doing her any good; and as to myself, I have been long perfectly convinced, though perhaps I never told you so before, that the sea is very rarely of use to anybody. I am sure it almost killed me once."

Here Mr. Woodhouse's other daughter, Emma, "feeling this to be an unsafe subject," attempted a diversion. But it is very difficult to keep general family conversation away from quicksands and shallows. In five minutes Mr. Woodhouse had drifted back to the old topic.

"My dear, when Perry comes next," he said to Mrs. Knightley, "you had better let him look at little Bella's throat."

"Oh, my dear sir, her throat is so much better that I have hardly any uneasiness about it. Either bathing has been of the greatest service to her, or else it is to be attributed to an excellent embrocation of Mr. Wingfield's, which we have been applying at times ever since August."

"It is not very likely, my dear, that bathing should have been of use to her; and if I had known you were wanting an embrocation I would have spoken to——"



Here Emma Woodhouse interfered again in the interests of peace, and for some time was successful. But when supper appeared a casual remark was made about the shortcomings of the cook at the Knightley's seaside lodgings. That was enough.

"I shall always be very sorry that you went to the sea this autumn, instead of coming here," said the old gentleman, turning to his elder daughter.

"But why should you be sorry, sir?" inquired Mrs. Knightley. "I assure you it did the children a great deal of good."

"And, moreover," continued Mr. Woodhouse, without taking any notice of his daughter's remark, "if you must go to the sea, it had better not have been to South End. South End is an unhealthy place. Perry was surprised to hear you had fixed upon South End."

"I know there is such an idea with many people," said Mrs. Knightley, "but indeed it is quite a mistake, sir. We all had our health perfectly well there—never found the least inconvenience from the mud; and Mr. Wingfield says it is entirely a mistake to suppose the place unhealthy, and I am sure he may be depended on, for he thoroughly understands the nature of the air, and his own brother and family have been there repeatedly."

"You should have gone to Cromer, my dear, if you went anywhere. Perry was a week at Cromer once, and he holds it to be the best of all the sea-bathing places. A fine open sea, he says, and very pure air. And, by what I understand, you might have had lodgings there quite away from the sea—a quarter of a mile off—very comfortable. You should have consulted Perry."

"But, my dear sir," expostulated Mrs. Knightley, "the difference of the journey! only consider how great it would have been. A hundred miles, perhaps, instead of forty."

"Ah, my dear, as Perry says, where health is at stake nothing else should be considered; and if one is to travel, there is not much to chuse between forty miles and an hundred. Better not move at all; better stay in London altogether, than travel forty miles to get into a worse air. This is just what Perry said. It seemed to him a very ill-judged measure."

Here Mrs. Knightley's husband, who was a short-tempered man, broke in.

"Mr. Perry," he said, in a voice of very strong displeasure, "would do as well to keep his opinion till it is asked for. Why does he make it any business of his to wonder at what I do?—at my taking my family to one part of the coast or another?"

I may be allowed, I hope, the use of my judgment as well as Mr. Perry. I want his directions no more than his drugs." He paused, and, growing cooler in a moment, added, with only sarcastic dryness, "If Mr. Perry can tell me how to convey a wife and five children a distance of an hundred and thirty miles with no greater expense or inconvenience than a distance of forty, I should be as willing to prefer Cromer to South End as he could himself."

Miss Austen tells us that "Mr. Woodhouse was rather agitated by such harsh reflections on his friend Perry, to whom he had in fact, though unconsciously, been attributing many of his own feelings and expressions." That this is a constant failing of patients, those of us, who have undergone the ordeal of listening to their exposition of the views of their former medical attendants, know only too well.

From reading her books one would be inclined to think that until she was attacked by her own fatal illness Miss Austen knew very little of disease. Even the most fortunate households are rarely free for any length of time from sickness and accidents, and in novels of domestic life, such as those under consideration, we should have expected to hear more of them than we do. Very few of these dark threads are used in the weaving of the writer's pretty stories, and if by chance they do appear, their sombre shades are killed by the bright colour of the rest of the web, and they are never employed to enhance its brilliancy.

Sore throats, it is true, are rather prevalent, and there is once the suspicion of scarlet fever being in the neighbourhood, and something is said about measles. As we go so often to Bath, we naturally expect to hear something about rheumatism and gout; and so we do. As for accidents, the skin being rubbed off a lady's heel from too much walking, and probably by an ill-fitting shoe, is nearly as important as a sprained ankle. The case of concussion of the brain, mentioned in *Persuasion*, is rather interesting, on account of the change in the patient's mental disposition, which is said to have been observed after her recovery.

Imaginary ailments come into rather higher relief, principally because the novelist appears to have considered them to be suitable subjects for the exercise of her powers of irony. It is curious that it is the mother in the story who usually suffers from these imaginary complaints. The question arises as to whether Miss Austen's own mother might not have been *unc malade imaginaire*. If she were, I am afraid the novelist was not always

a sympathetic daughter. A person gifted with fairly keen insight into other people's foibles, and endowed with a sarcastic tongue, is not an unmixed blessing in a family circle.

As to the graver forms of disease and their fatal termination, they are only mentioned in passing. We hear the muttering of the thunder in the distance, but the storm does not break upon us. Possibly this may be connected with the lack of pathos in the stories. The novelist's placid life is mirrored in her placid novels. Miss Austen herself appears to have been conscious of this defect in her writings. Referring to *Pride and Prejudice* in a letter to her sister—a letter in which there is a pardonable touch of vanity—she says, "The work is rather too light and sparkling; it wants shade." From one point of view this lack of pathos is a grave fault. It enfeebles the plot interest of the stories. They go meandering on as unruffled as a Lowland river. Nobody feels the least anxiety as to how they will end. However great may be the difficulties which separate the lovers, and however unpleasantly their relatives may act, one knows from the beginning that the affair will terminate happily.

But perhaps it was all for the best; even the shadow of real suffering would have been too heavy for such gossamer comedy.

But one cannot help feeling sorry that Miss Austen has not told us more about her doctors.

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## CLINICAL RECORD.

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### TWO CASES OF UNUSUAL CONGENITAL ABNORMALITIES.

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#### I.—A CASE OF CONGENITAL TUMOUR IN THE FRONTO-NASAL REGION.

THE subject of this rare condition was a male child, aged 2 years. There was no great disparity in the ages of his parents, who were well; and a brother, aged 4, was well formed and in good health. The patient was a full-time child and born without difficulty. There was found to be a large double hare-lip and cleft palate, the cleft being much wider on the left than on the right side. Dependent from the region of the left fronto-nasal suture was a pyriform,



thin-skinned, reddish tumour  $1\frac{1}{2}$  ins. in length. It had a translucent appearance, its surface was glazed and smooth, and it was of a somewhat soft consistency. When the child was in the erect posture the fundus of the tumour was on a line with the lower margin of the left ala nasi, while towards its attachment the tumour narrowed to a fairly defined pedicle. The tumour could not be diminished by pressure, and there was no evidence that it communicated with the interior of the cranium.

Under a general anæsthetic the tumour was easily removed. Its pedicle was encircled by an incision at the tumour's junction with the normal skin. The vascularity required but a single ligature for its control and the skin was drawn together by a catgut suture. The child was little inconvenienced by the operation and made quite a satisfactory recovery. A month later, at the parents' urgent solicitation, a plastic operation was undertaken for the rectification of the hare-lip and cleft palate, but the interference with the nutrition was such that the child died eleven days later.

The tumour examined by Professor Sutherland was reported on as "a congenital tumour composed of fibrous tissue, unstriped muscle, etc." I have elsewhere published and figured<sup>1</sup> an almost similar case, where a larger tumour depended from the same region in a child of  $1\frac{1}{2}$  years, but the tumour in that case contained a nævoid element, which is absent from the present example. One cannot dissociate the presence of this tumour from the embryonic fissures which separate the various processes of which the face is made up. Further, one is not surprised to find that a congenital tumour obviously in relation with the junction of the upper portion of the maxillary process with the nasal field should be found in association with that want of union of the nasal and maxillary processes which constitutes hare-lip and cleft palate.<sup>2</sup>

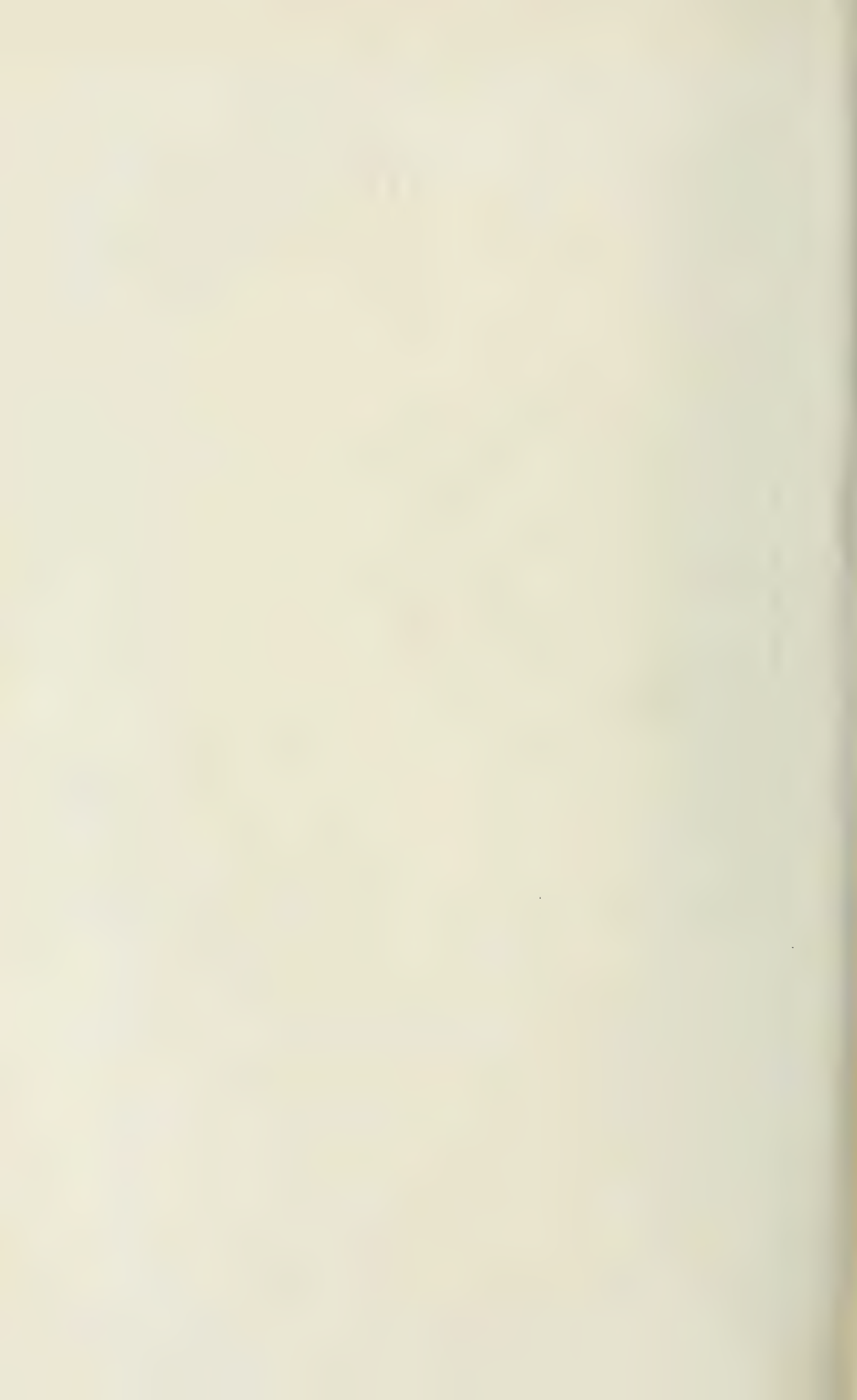
## II.—A CASE OF CONGENITAL DUPUYTREN'S CONTRACTION OF THE FINGERS.

Patrick C., aged 5 weeks, was recently brought under my observation on account of alleged inability to extend the fingers, a condition which had existed since birth. He was the fifth child in the family; the parents and other children, well and healthy, presented no abnormality. He was breast-fed, well formed and well developed, and of good colour. The mother had noticed since birth a difficulty in getting the child's palms washed, in that she was unable to get the child's fingers extended. As the child lies the fingers of both hands are flexed into the palms while the





Mr. Grogg's Case of Congenital Pre-nasal Fistula.



thumbs are free and extended—the reverse of what is found in tetany. Though movement at the wrists appears free, full, and under voluntary control, the child apparently prefers to keep them in the position of rest, that is, slightly flexed. There is no deviation of any finger from its normal longitudinal axis, the arms and forearms are well developed and apparently possess all normal movement, and there is no abnormality in the feet or lower limbs.

To obtain a detailed examination of the hands it was necessary to give so young a child a general anæsthetic, when the condition was found to be as follows:—

*Right Hand.*—The thumb is normal. It is outside the flexed fingers, not flexed under them on the palm. The index is tucked under the middle finger and the thumb in flexion crosses over the index and part of the middle finger. The index, middle, and ring fingers are flexed at their proximal interphalangeal joints, being held in this position by a sickle-shaped extension of normal tissue on the palmar aspect of each finger. The fold passes from the base of each distal to the base of each proximal phalanx and does not allow of passive extension of the finger beyond a right angle at the proximal interphalangeal joints. The condition could only be shown diagrammatically, as it was found impossible to obtain either a photograph or a cast. It will be understood that the antero-posterior depth of each finger is much increased by the band of tissue proximally, but the terminal phalanx in each finger is normal. Forced palmar flexion at the wrist allows apparently of some correction of the deformity of the three outer fingers, the little finger being then practically normal, but no diminution is produced in the restriction of the index.

*Left Hand.*—The same condition pertains as in the right, but the abnormality is more marked in the middle, ring, and little fingers than in the index, and in this hand also the thumb is apparently normal. The same increase of antero-posterior diameter exists in each of the affected fingers and the same sickle-shaped band of tissue, and the flexion of the fingers is not released by flexion of the wrist.

I am unaware of this condition having been previously described. It is not, apparently, a tendinous affection, and there is no evidence that there is any abnormality in the growth or peculiarity of innervation of the muscles. The affection appears to me to involve the skin, subcutaneous and deep fascia, and to be very similar indeed to the condition known as Dupuytren's contraction in adults, though there can be no community of etiology

and it is not progressive. Nor does there appear to be the fixation of the palmar fascia to the skin, which is so characteristic of Dupuytren's contraction. If, as Hutchinson<sup>3</sup> points out, and as I believe, Dupuytren's contraction is due to an alteration in the normal processes of palmar fascia passing along the anterior surfaces of the fingers, there is no inherent impossibility that an exaggeration of these processes *in utero* could not produce this congenital abnormality.

REFERENCES.—<sup>1</sup> Greig, D. M., "A Complex Tumour of the Fronto-Nasal Region," *Brit. Journ. Child. Dis.*, October 1911. <sup>2</sup> Keith, A., *Human Embryology and Morphology*, London, 1913, p. 141. <sup>3</sup> Hutchinson, J., "Dupuytren's Contraction of the Palmar Fascia," *Lancet*, 24th February 1917.

## RECENT ADVANCES IN MEDICAL SCIENCE.

### NEUROLOGY.

UNDER THE CHARGE OF

EDWIN BRAMWELL.

#### CONGENITAL AND HEREDITARY WORD-BLINDNESS.

WORD-BLINDNESS, or visual aphasia, as some prefer to term this symptom, denotes, as is well known, an inability to read written or printed language although the letters and words are distinctly seen.

Kussmaul, in 1877, demonstrated that word-blindness is met with as an isolated condition. Some five years previously Broadbent had emphasised the frequent association of inability to read with motor aphasia and amnesia, while Bastian, writing in 1869, clearly shows that he recognised the nature of sensory aphasia as a disturbance of a definite faculty. Although much has been written regarding word-blindness, the occurrence of congenital and hereditary word-blindness has only of recent years been recognised. The subject is of interest both in its scientific and practical aspects. Hinshelwood's monograph upon *Congenital Word-blindness* (H. K. Lewis & Co., Ltd., London, 1917) is especially welcome, since to this author the credit of drawing attention to the occurrence of both congenital and hereditary word-blindness is largely due.

Combined clinical and pathological observations have demonstrated that lesions which destroy the angular and supra-marginal convolutions on the left side of the brain produce word-blindness. It is consequently assumed—a conclusion which is almost universally accepted—that this region of the cerebral cortex constitutes a centre the special function of which is to act as a storehouse for visual speech memories;



in other words, for the visual percepts of words and letters. But visual aphasia is not merely observed in association with lesions which destroy this region of the cortex — the so-called visual speech centre; for it is a matter of common knowledge that lesions situated in the white matter of the centrum ovale, which underlies the cortex in this neighbourhood, are also accompanied by this symptom. The explanation advanced to account for these cases in which the visual speech centre is not destroyed is based upon the fact that this region of the cortex is connected anatomically with the two lower visual centres, the so-called half-vision centres, which are situated on the inner surface of the occipital lobes. Thus a softening due to thrombosis of the posterior cerebral artery on the left side of the brain is accompanied by visual aphasia, a consequence of destruction of the fibres which pass not only from the half-vision centre in the left occipital lobe, but also those from the half-vision centre on the right side of the brain. Hemianopia is also observed in these cases. A characteristic feature which serves to distinguish what Bastian has termed the parietal or cortical type of word-blindness from the occipital or subcortical variety is the occurrence in the former of agraphia, or inability to write. This symptom is explained by the obliteration of the visual speech centre. In the occipital variety the centre is not destroyed but merely cut off from the half-vision centres: hence in this variety writing is not interfered with. Among points of interest which have been noted in connection with visual aphasia are the observations that the ability to recognise figures is often completely or relatively unimpaired; that cases are sometimes met with in which syllables and words can be deciphered whereas individual letters cannot, and *vice versa*; that an individual who has learned to read two or more languages may retain the ability to read one, not necessarily that with which he is most conversant; that the musical faculty may be little if at all impaired—an individual with word-blindness may be able to read music when he cannot read letters or words; and that a young subject who acquires visual aphasia may be taught to read again, the process no doubt depending upon the re-education of the corresponding region in the opposite cerebral hemisphere.

Hinschelwood relates three cases of acquired word blindness which are of much interest in connection with prognosis. The first case was that of a man of intelligence and education, aged 58, who was the subject of subcortical word-blindness, a consequence of thrombosis. Six months after the occurrence of the lesion he commenced daily practice in reading; he was never able, however, to reacquire the visual memories of words, with the exception of words of two letters, and he could only read by spelling each word aloud and thus appealing to his auditory memory. The strain, he said, took too much out of him, and after a year's constant application he gave up the attempt.

The second case was that of a woman, aged 34, who, when first examined by Hinshelwood fourteen months after the cerebral attack, could not recognise a single letter of the alphabet. Her brother, who was a school teacher, subsequently gave her daily instruction. The first reading primer was mastered in about ten weeks, and sixteen months after commencing to learn to read it was noticed that "in common narrative a large proportion of the words are now not spelt at all, and of those which she requires to spell few have now to be read aloud." When seen nine years later it was noted that "she reads newspapers and books for her pleasure much as she used to do." The third case was that of a girl, aged 14, who, prior to her attack, was in the fourth standard and could read very well. Fourteen months after the onset of her illness she was seen by the author; at that time she was unable to recognise a single letter or word. Four months after commencing re-education she could recognise all the letters of the alphabet, and could pick out by sight a large number of small words. Two years after she had commenced to learn to read, her education having been undertaken by her father, she was able to read as well as ever. These three cases illustrate the possibilities of re-education in acquired word-blindness, as also the fact that in a young subject the outlook is very much better than in the case of an older person.

The above remarks regarding acquired word-blindness form a necessary introduction to a consideration of the congenital variety. According to Hinshelwood, it was W. Pringle Morgan who in 1896 made the first contribution to medical literature on this topic. This writer describes the case of a boy, aged 14, "bright, intelligent, quick at games, and in no way inferior to others of his own age unless in his inability to read. With very great difficulty he learned his letters, and though at school and under tutors for seven years, and in spite of persistent efforts, he could only with difficulty spell out words of one syllable." The boy apparently found no difficulty with arithmetic. His schoolmaster said that he would be the smartest boy in the school if instruction was entirely oral. This case is a typical example of congenital word-blindness, since it exhibits the two essential characteristics of genuine cases, viz. gravity of the defect and purity of the symptoms. In 1900, Hinshelwood reported two instances, indicated that these cases might be found perhaps not to be so very rare, and at the same time pointed out the necessity of differentiating these patients from imbeciles and incorrigibles. Twelve cases met with by the author are described in the present monograph.

In the process of learning to read, three stages may be recognised—Firstly, the storing up of the images of the letters of the alphabet; secondly, learning to spell the words by means of the auditory images stored up in the auditory speech centre—we can spell words before we can recognise them by sight; and, thirdly, the gradual acquirement

and storage of the visual memories of words, each word becoming a separate picture and no longer simply a combination of letters. When this, the last, stage is reached the individual can read by sight alone. Cases of congenital word-blindness manifest their defect in the first stage, although most of the cases here described had reached the second stage when they came under observation. It is interesting to note that in only three of the cases here reported did the difficulty extend to figures, while two of the patients were said to be markedly above the average in arithmetic. It would indeed seem that the visual memory for words and letters is completely independent of that for figures. All the twelve patients above referred to learned to write, but, as a rule, failed when they were asked to write to dictation. In one case the patient, a boy, had made very satisfactory progress with his musical studies.

Congenital word-blindness is apparently much more frequent in boys than in girls; thus in Hinshelwood's series only two of the patients were girls. There is considerable difference of opinion as to the frequency of cases of congenital word-blindness. Hinshelwood, who has met with thirty-one cases in fifteen years, regards the condition as moderately rare.

Instances of hereditary word-blindness have been described by Thomas, Sydney Stephenson, and Herbert Fisher. Four of the cases of congenital word-blindness recorded here by Hinshelwood occurred in brothers; they were the four youngest children of a family of eleven, while two additional cases—a boy and a girl—were the children of the eldest sister of the same family. These cases are best explained by defective development of the visual speech centre. The fact that hemianopia has not been noted in any of the reported cases of congenital word-blindness supports the view that the symptoms are a consequence of defective development of the speech centre rather than of disease or injury to it.

The greatest differences, as is well known, are met with in children as regards their ability to learn arithmetic, mathematics, languages, and music. These differences are no doubt to be explained by physiological variations and the degree of development of the special areas associated with these functions. Hinshelwood suggests that cases in which a child has some difficulty in learning to read, no doubt in consequence of slight defective development of the visual word centre, should be, for practical purposes, distinguished from those cases in which there is a great difficulty, for which the term congenital word-blindness should be reserved.

The author's method of routine examination in cases of congenital word-blindness is as follows:—He takes the first reading-book, points to a picture, say of a cat, and asks the child what it is; he then asks the child to spell the word: after this he shows the child the alphabet



and ascertains that he recognises the individual letters c a t, although he does not point to the letters in this order; finally, he tells the child to look at a page of print and to pick out at sight the word "cat" without spelling it.

These patients, with proper treatment and great perseverance, can eventually be taught to read. The important point is that the child should receive personal instruction and be taught alone; the teacher must exercise great patience and perseverance. A number of short reading lessons every day are advised, the duration and frequency of the lessons being adapted to suit the individual case. The author is satisfied as to the superiority of the old familiar method of teaching these children to read as compared with what is known as the "look-and-say" system, which has been advocated by Fisher and Bishop Harman. It would certainly seem on theoretical grounds that a method which brings into play the auditory centre, as is the case with the old system of learning to read, would be superior to one in which, as in the "look-and-say" system, the aid of the visual speech centre is alone utilised.

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## SURGERY.

UNDER THE CHARGE OF

J. W. STRUTHERS, F.R.C.S., D. P. D. WILKIE, F.R.C.S.,  
AND JAMES M. GRAHAM, F.R.C.S.

### ARTERIOVENOUS ANEURYSM OF THE INTERNAL CAROTID TREATED BY ARTERIORRAPHY.

RENÉ LE FORT (*Bull. de l'Acad. de Méd.*, 7th August 1917) describes in detail an operation performed for arteriovenous aneurysm involving the internal carotid and internal jugular vessels. The patient had been wounded three months prior to operation by a bullet which had completely traversed the neck and injured the pharynx in addition to the vessels. The chief symptom complained of was the constant thrill, which, felt at first in the neck alone, but later also on the affected side of the head, became ultimately almost unbearable.

That the internal carotid was the vessel affected was diagnosed by noting that the thrill in the neck could be abolished by compression above the level of the bifurcation of the common carotid, without affecting the pulsation of the superficial temporal artery.

After obtaining free exposure a temporary ligature was placed on the common carotid. The internal jugular vein, which was much dilated, was ligatured and divided above and below the level of the communication with the artery. The internal and external carotids were next compressed by an assistant above the level of the aneurysmal



opening and the isolated segment of vein was then split up, disclosing the opening in the wall of the artery. After closing the orifice the arterial suture was reinforced by overlapping the adjacent segment of vein. By conserving the internal carotid artery the risk of cerebral symptoms was avoided, and the patient made an excellent recovery. In making the dissection, the vagus, superior laryngeal and hypoglossal nerves had to be carefully freed from adhesions to the surrounding parts. Le Fort believes that suture of the orifice should be attempted much more frequently than is done in arteriovenous aneurysms of both the common and internal carotids.

Except in urgent cases the operation should be postponed for several months, as recommended by Tuffier, as it is then easier to isolate the vessels. It is necessary to have a free exposure and to make an anatomical dissection of the parts. The normal vessels and nerves should be identified first, and then traced to the area of the aneurysm, where they are usually involved by adhesions. Temporary ligation or compression of the artery or arteries above and below the aneurysm is necessary in order to ensure hæmostasis. The main difficulty is the dissection of the vein, which is always dilated and adherent and often friable. The vein should be doubly ligated and divided above and below, if possible where the vessel is healthy. In dissecting up the vein great care is necessary to avoid tearing holes, and it is advisable to proceed slowly with the dissection, ligating all tributaries. Suture of the opening in the artery, after complete resection of the involved part of the vein, is often impossible. It is much safer not to completely detach the vein where it is adherent around the communication with the artery, and to suture the opening as it lies exposed from within the vein, which has been previously slit up and which finally can be stitched over the sutured line.

#### THE AMBRINE TREATMENT OF BURNS.

Risley (*Boston Med. and Surg. Journ.*, 13th September 1917) records his impressions of the treatment of burns by paraffin preparations. The substance ambrine was invented by de Sanfort of the St. Nicholas Hospital near Paris, but the exact formula was not published. In order to ascertain the exact composition a pound of ambrine was bought, at a price of six dollars, in New York, and analysed. It was found to contain, roughly, 90 to 95 per cent. of paraffin of a good grade, 5 per cent. of beeswax, a small amount of resin, probably some such product as eucalyptol, and an aniline colouring matter, enough to give the ambrine its peculiar grey-brown colour. The melting-point was about 140° F.

A substitute was also employed with the following composition:—

Paraffin of melting-point—52° C.	90 per cent.
Japan beeswax	5 „
Spermaceti	5 „

These were heated at 150° for thirty minutes. No colouring matter or disinfectant was added.

The method of application used with both preparations is as follows:—

The burned area is cleaned up very gently as far as possible, removing dead skin and traces of previous medication; blebs are pricked near their bases but the cover is not removed. The surrounding skin is cleaned thoroughly with alcohol and the part allowed to dry as much as possible, or this may be hastened by using a warm air blower. Meanwhile the ambrine or its substitute has been heated in a water-bath—the ambrine to 140° F. and the substitute to 130° F. This is then sprayed or painted quickly over the burned area and for about 2 inches over the surrounding healthy skin. Theoretically the spray is best, but, practically, gentle application with a flat camel's-hair brush, about 1½ in. wide, does as well. If the paraffin mixture is applied gently and quickly at this temperature a thin, smooth film forms over the area and makes a firm air-tight dressing. A very thin layer of sheet wadding is next applied and a second coat of ambrine is painted over its surface. The part is steadied, if necessary, by a splint, and a bandage also may be used. The dressing should be changed in twenty-four hours. Generally enough serum collects to float the ambrine coating to some extent. It lifts off easily and is usually intact, as it rarely sticks to the burned part. The area is now washed with warm boracic lotion, dried with a blower, and the preparation reapplied as before, repeating each twenty-four hours till the surface is healed.

The application of a paraffin mixture at 140° F. is only momentarily painful. A rather uncomfortable sensation of extreme heat is produced at the first moment of application, but immediately the first coating is on this sensation quickly subsides and gives place to one of rather soothing comfort. There is a slight feeling of constriction or adhesiveness for the first few hours, but after that no particular sensation is observed. The removal of the dressing is absolutely painless and in contrast to the pain associated with the usual forms of dressing.

None of the cases of burns of limited extent in the author's series showed the slightest signs of sepsis. The resulting scars were noticeable for their softness, smoothness, and pliability. In several cases the healing was remarkably rapid. The author states that, although his experience is still limited, he has been converted from scepticism to a rather firm belief in this method of treating burns. From the point of view of comfort alone it is a decided advance over other forms of dressing. The effect of the dressing must be purely mechanical. In

the first place, the dressing is sterile; secondly, it immobilises the affected area; and, thirdly, it makes an air-tight application, which may possibly be the reason why it does not favour bacterial growth; finally, overgrowth of granulation tissue is prevented by the pressure of the paraffin sheet.

#### ULCERATION OF THE COLON IN THE NEIGHBOURHOOD OF GUNSHOT WOUNDS.

Dunn and Hamilton Drummond (*Brit. Journ. Surg.*, July 1917) have observed that where a missile has passed near a fixed portion of the colon, without actually touching its wall, it may give rise to an appearance of extensive ulceration of the mucous membrane. This form of ulceration is liable to extend deeply into the intestinal wall and to be followed by perforation and peritonitis or by retro-peritoneal cellulitis. When such a complication arises the condition is liable to prove fatal, but there is little doubt that ulceration of this type is sometimes present in cases which ultimately recover. Bowlby has stated that faecal fistula is not an infrequent development in relation to wounds of the loin which are known not to have penetrated the intestine. The lesions observed in six cases developed at remarkably early stages—from seven to twenty-six hours after injury. In each case perforation of the viscus by the missile, or even direct contact with it, could readily be excluded. The lesions were observed only in the fixed portions of the colon and usually in the unsupported sacculi. Some laceration of the muscular coat was always found, though the area of this was much less than the lesion of the mucosa. The damage to the muscular layers is attributed either to the dragging effect of strands of fibrous tissue or of blood-vessels, or to the sudden impact in a gas-filled sac, resulting in bursting at weak points. Evidence has already been brought forward by one of the authors to show that there are specially weak points in the normal sacculi where the larger vessels perforate the muscular wall.

Many of the perforating vessels supplying the mucosa were torn across at the points where they entered the submucosa from the muscular coats; this fact explains the great extent of loss of mucous membrane where the injury of muscle was comparatively trivial, the patch of mucosa being readily killed by loss of blood-supply.

In all cases the damaged areas were subjected to early infection from the bowel, and readily became gangrenous.

From the point of view of treatment it is evidently important to provide adequate drainage of wounds in the flanks in all cases where definite bruising is visible on the wall of the colon; this applies particularly to the fixed ascending and descending parts.

J. M. G.



## OBSTETRICS AND GYNECOLOGY.

UNDER THE CHARGE OF

A. H. F. BARBOUR, M.D., AND J. W. BALLANTYNE, M.D.

## TUBERCULOSIS OF THE FEMALE GENERATIVE ORGANS.

DR. UMBERTO TASSONI (*Ann. di ostet. e ginec.*, 1917, ann. xix. pp. 25-40) has carefully analysed the clinical details of nine cases of genital tuberculosis in women and has reached the following conclusions from a study of them and of the literature of the subject:—His observations were carried out in Professor Pestalozza's Clinical Institute in Rome, where, during the period 1906 (January) and 1908 (December), there were 948 patients suffering from gynecological troubles; of these, nine were undoubtedly instances of tuberculosis. The infection may develop in any part of the reproductive system, but the seat of predilection is the Fallopian tube. In seven out of Tassoni's nine cases the tube was the part affected. A reason for this predilection is found in the fact that the tube is in close proximity to the intestines and the peritoneum—frequent seats of the disease; another cause is the narrowness and bending of the tubal lumen, which may give a resting-place for the bacilli. The ovary and the vagina are almost exempt. A hypoplasia of the reproductive organs predisposes to the development of the malady, and this condition was met with in seven out of the nine cases. Primary infection from coitus is to be regarded as possible; but secondary infection is the rule. In seven of the patients there was antecedent tuberculosis of the pleura, the peritoneum, or of the lungs; and the period of time which intervened between the primary infection and the secondary genital manifestations varied from fifteen to two years. The disease conferred sterility, four of the women never having borne children and the remaining five only having conceived before they became tuberculous. As a rule, genital tuberculosis runs a long course, and the early symptoms are vague. The adhesions which the affected genital organs may develop in connection with neighbouring parts may interfere with the functions of the latter; in one of Tassoni's patients intestinal constriction was thus produced, necessitating resection. In one case gonorrhœa coincided with the tuberculous infection, and another woman had been infected with syphilis by her husband. The treatment which is to be preferred, because of its greater efficacy, is surgical; it consists of the removal of the tuberculous focus in circumscribed forms, and of the whole generative apparatus in widespread infections. When the process has spread to other organs and is not suitable for surgical intervention general means of treatment must be relied upon.



## A POSSIBLE SERUM TEST OF PREGNANCY.

Dr. G. Ecalle (*Arch. mens. d'obstét. et de gynéc.*, 1917, ann. vi. pp. 139-158), whose researches on the physiological chemistry of pregnancy are well known, has been experimenting on the cobra-venin reaction, a reaction which is based on the fact that the serum of the pregnant woman, on account of its increased lipid content (lecithine), possesses the property of activating the hæmolysis of the red cells of the horse produced by the cobra-venin. His conclusions are, that the activating power of the serum on the cobra-venin is raised higher in the pregnant woman than in the normal non-pregnant woman. This property of the serum increases progressively in the early months of gestation, attains its maximum about the sixth month, and maintains that level up to the time of labour. Further, the activating power of the serum is often raised higher in the woman whose pregnancy is complicated by toxæmic phenomena. This reaction seems to be provoked by the increase in the quantity of lecithine contained in the serum, and it does not appear to be a specific character of pregnancy. Yet Dr. Ecalle is of the opinion that after the third month it may by its constancy and its intensity be reckoned as a diagnostic sign of secondary value in cases of doubtful pregnancy. In order, however, safely to draw conclusions from this sign it will be necessary to exclude tuberculosis, cancer, and most of the infectious maladies and the diseases of the nervous system. These restrictions obviously diminish its practical diagnostic value, as does also the comparatively late date in pregnancy when it can be elicited; at the same time, its bearing upon the nature of pregnancy and its biological interest warrant the carrying out of further experiments.

## ERODIUM CICUTARIUM AS A UTERINE HÆMOSTATIC.

The difficulty in obtaining hydrastis and its high price have led Dr. J. A. van Dongen (*Arch. mens. d'obstét. et de gynéc.*, 1917, ann. vi. pp. 169-182) to try the experimental and clinical effects of erodium cicutarium as a substitute, and, on the whole, he has been well satisfied. He employed the liquid extract of the drug, and from experiments he came to the conclusion that erodium should be placed between ergotine and hydrastis in its action on the uterus, whether inside the body or outside. The clinical results were encouraging. In menorrhagia and metrorrhagia in virgins the result was good in 69 per cent., fair in 16, sufficient in 5, doubtful in 5, and absent in 5. In the hæmorrhages of the menopause the result was good in 37.5 per cent., fair in 25, sufficient in 18.3, and negative in 18.3. In menorrhagia and metrorrhagia due to lesions of the tubes and ovaries the result was good in about 54 per cent., fair in 15, sufficient in 15, doubtful in 8, and negative in 8. In idiopathic hæmorrhages a good result was got in 47 per cent., a fair one in 32, a sufficiency one in 5, and none at all in 16 per cent. It

was to be noted that in most of the cases in which erodium failed the other styptics, such as ergotine, hydrastis, stypticin, and even curettage itself, had no better success: whilst erodium often led to a cure when other drugs had failed. In dysmenorrhœa also Dr. van Dongen got encouraging results, especially when the pain was accompanied by a profuse flow and the presence of clots. Dysmenorrhœa due to uterine displacements, to fibroid tumours, and to abortions was not ameliorated by erodium. The clinician, at any rate, has sufficient evidence before him to warrant him in testing this new agent coming from the natural order of the Geraniaceæ.

#### REPAIR OF THE INJURIES OF PARTURITION.

When should injuries of the genital tract received during labour be repaired? Dr. Barton Cooke Hirst (*Amer. Journ. Obstet.*, 1917, vol. lxxvi. pp. 50-53) says "not immediately;" and one must respect his opinion, founded upon an abundance of experience. What reasons does he give? He says that for more than a generation the procedure of immediate repair has been practised, and yet of the women coming to the specialist more than half are suffering from the effects of lacerations. Still the teachers and the text-books continue to advocate immediate repair. Patients, too, do not like to be anæsthetised again some days after delivery; and the doctor does not feel confident of making a good business of the intermediate operation, because of lack of technical knowledge, of a skilled assistant, and of the necessary armamentarium. For these causes the old plan of immediate repair is continued. But it ought to be abandoned is Dr. Hirst's plea, and he puts some persuasive arguments before the profession. "What man of good surgical judgment or sufficient surgical experience could expect a satisfactory result from plastic surgery done immediately after a child's birth, with the field of operation obscured by a profuse bloody discharge; with the operation conducted on a bed; with insufficient light, insufficient assistance, and possibly insufficient implements; with the tissues bruised, pulled awry, and distorted? What possibility is there of a correct diagnosis under these circumstances; of a distinction between the laceration of the cervix; the lacerations of the two layers of the triangular ligament; the lacerations of the levator above these layers; of the deep transversus perinei and the compressor urethræ between them; of the structures in the perineal centre or body; of Colles' fascia; and perhaps of some of the fibres of the sphincter and of some of the other muscles under Colles' fascia, the superficial transversus, and the bulbo-cavernosus?" What would Dr. Hirst have us put in the place of immediate repair? His answer is "intermediate repair," and he practises what he preaches. For fifteen years he has made all the repairs that are at all extensive a week after the baby's birth. Earlier than that time he holds it is impracticable to repair the cervix, because

of the danger of infecting the endometrium, and by that time an accurate diagnosis of all the injuries is perfectly practicable. Dr. W. Pohlman Pool (*Amer. Journ. Obstet.*, 1917, vol. lxxvi. pp. 53-57) ventures to disagree to some extent from Dr. Cooke Hirst. He does so from the utilitarian point of view. He wonders if Hirst's plan is practicable as a routine one. He says, and many practitioners will say so too, "I doubt that I could induce all my obstetric patients to submit, within a few days of the delivery, to a second anæsthetic and a second surgical procedure, with all that it involves in the home; and I am very sure that the average young practitioner who feels himself obliged to conduct many of these cases under conditions that are far from ideal, and for a consideration that is nominal, could not do so." Dr. Pohlman Pool would distinguish between the cases in which immediate repair may be done and those in which delay is indicated, and he thinks that the degree of the tear is of less importance than its other characters. For instance, in the superficial and straight variety of wounds coaptation is easy, and repair may be accomplished during the third stage, utilising the anæsthesia which has been employed for the delivery of the child. An exception may be made when pituitrin has been given in the second stage and the possibility of hour-glass contraction is present. Deeper tears require a more thorough examination, and it is better to wait for the expulsion of the placenta and the control of bleeding before deciding what to do. The lithotomy position on a kitchen table will aid, and the administration of pituitrin will help the full inspection of the torn surfaces. If the injured structures can be identified and if the wound be straight, even although deep and extensive, immediate repair may be done with a good result; but if the wound be crooked or ragged as well as deep, and the tissues difficult of recognition, it is usually better to postpone till a later time. The most difficult cases are those in which the levator is separated from its bony attachment; these are better removed to a hospital for later operation. The lower levator injuries separating it from its attachment to the rectum are more easily reached and may be repaired at once if other circumstances are favourable. In complete lacerations Dr. Pool would repair at once, for he believes that every hour that passes over a divided sphincter decreases the probability of firm union when operation is done. If, however, complete tears are left open, a plug of gauze should be placed in the rectum for protection till the operation can be done. If a median perineotomy has been done, as Dr. Pomeroy recommends, it should be repaired immediately. In conclusion, Dr. Pool feels that all injuries of whatever sort should be repaired within twenty-four hours of their occurrence, if conditions permit. He does not believe in the older teaching, that wound surfaces may be revived at any time within a week by rubbing them with a piece of gauze. Dr. Pool's effort at differentiation in dealing with



lacerations is worthy of close study; it probably represents what most careful general practitioners try to do, although they may not represent to themselves the reasons for their action so clearly as they are given here.

J. W. B.

## MENTAL DISEASES.

UNDER THE CHARGE OF

JAMES MIDDLEMASS, M.D., F.R.C.P.E.,  
Sunderland Borough Asylum.

### THE SOUTH AFRICAN MENTAL DISORDERS ACT, 1916.

THIS important new Act repeals all the laws of the separate States of the Union and sets up a uniform procedure for the whole of South Africa. If it did nothing more it would have served a most useful purpose, but advantage has been taken of this unique opportunity to bring the treatment of mental diseases more into accord with recent medical views on this very important matter. The provisions of the Act were admirably summarised in an address given to the Pretoria Branch of the British Medical Association by Dr. Dunstan, the Government Commissioner appointed under the Act (*Med. Journ. of South Africa*, October 1916, p. 35).

As stated by him, the changes introduced by the new law follow pretty closely the English Lunacy Act of 1889 and the Mental Deficiency Act of 1913. In some respects it goes a step further on the road which opinion in this country is strongly inclined to take. This leads in the direction of according much greater facility to voluntary treatment in the early stages of the disease. The success of methods already adopted in Scotland for some years has evidently impressed South African legislators, and they have gone even further in this direction. Under the new Act it is now possible for a patient to apply for admission to a general hospital. The advantages of this provision are obvious to the patient, to the medical profession, the nurses, the public, and the study of the disease itself. If necessary, and in some cases it is obvious that it may become necessary, the medical officer of the hospital may detain the patient for forty-eight hours, and with a magistrate's approval for seven days. Under renewed certificate and magisterial sanction the patient may be detained for two further periods of three weeks, making seven weeks in all. At the end of this period the patient may leave voluntarily, or steps for certification may be taken if required. During these weeks the patient retains his civic status. The steps are thus extremely simple and informal. It is admittedly a new venture, but there is little doubt that, if the hospitals adapt themselves wisely to their new responsibilities, the



venture will be completely successful. There are also important amendments made in the proceedings required for treating patients in private dwellings, the results of which will be watched with interest in this country, where similar amendments have been strongly urged.

Dr. Dunstan sums up the strong points of the Act in the following terms:—

1. No form of treatment which could possibly be beneficial to the patient should be debarred by any of its provisions.

2. Under it, it should be possible to place a patient under treatment at the earliest possible moment without unnecessary formality.

3. It should be possible to discharge a patient when treatment and supervision are no longer necessary, and also without undue formality or delay.

4. Every safeguard should be provided against improper detention of the patient or unscrupulous use of his property.

5. The law should reflect enlightened medical opinion.

If all these provisions are secured the Act will undoubtedly confer great benefits on South Africa, and its results will be watched with the greatest interest here.

#### TOXI-INFECTION OF THE CENTRAL NERVOUS SYSTEM.

In this interesting and important paper (*Brain*, May 1917, p. 1) Drs. Orr and Rows continue to furnish information regarding further experiments as to the effects of toxins on the nervous system. In previous papers they have described the effects of toxins on the spinal cord, and have differentiated those produced by conveyance through the lymph stream from those conveyed by the blood. In the former inflammatory reaction is prominent, in the latter it is reduced to a minimum. In this series of experiments capsules containing cultures of *staphylococcus aureus* were placed in close contact with the common carotid artery in the neck of rabbits. Three brains were subsequently examined and the results were most interesting. Two types of lesion were found—(1) coagulation necrosis of the nerve cells of the cerebral cortex, cornu ammonis, and amygdaloid nucleus; (2) softening in the stratum moleculare of the cornu ammonis. Detailed descriptions of sections, with photomicrographs, are given. The conclusions drawn from a study of these changes are that both of them are dependent on disturbance of the pial vascular supply. In this they correspond with the changes observed by the authors in the spinal cord when subjected to hæmatogenous infection, and hence both may be attributed to the same cause. In the sections there were decided evidences of hyaline degeneration of the contents of the pial vessels, which were also dilated and engorged. In the late stages of the morbid process occlusion occurs, with consequent necrosis of the tissue supplied. This is the cause of the second of the above-mentioned morbid changes, while the

first is attributed to the ischæmia preceding occlusion. They regard the hyaline changes as evidence of toxic action in the blood elements.

From some observations in these experiments they are also led to certain conclusions regarding the blood-supply of the nervous system. The blood-supply of the grey matter is far richer than that of the white matter. The pial arterioles supplying the latter are longer and apparently do not anastomose, so that embolism or thrombosis of them leads to immediate necrosis. The short vessels supplying the grey matter are more numerous and appear to anastomose freely, so that their obstruction from hyaline change is not attended by such widespread damage, though damage there is. They admit, however, that this does not fully explain all the changes observed in the cortical nerve cells, and that the question requires much more extended and careful investigation. It is sincerely to be hoped that the authors may themselves have time and opportunity to carry these to a successful conclusion.

#### SYPHILITIC TESTS IN PSYCHIATRY.

Dr. E. W. Fell, of the Elgin State Hospital, Illinois, reports the results of the examination of 500 admissions by Wassermann and other tests (*Amer. Journ. of Ins.*, July 1917, p. 41). He considers the tests of value almost entirely in the diagnosis of paresis. Of the 500 admissions, 215 had reactions indicating syphilis, 285 were non-luetic. As regards the latter, a negative Wassermann reaction in the cerebro-spinal fluid was the principal deciding factor in classing a case as non-luetic. Of these, 27 had a positive reaction in the blood-serum, but in spite of this the psychosis was not regarded as syphilitic in origin. Fourteen, or more than half, of these were cases of dementia præcox, which itself formed a little less than one-third of the total of 285. The next most numerous class were the chronic alcoholics, of whom there were 50, with only two positive serum reactions. In the syphilitic cases, 215 in number, only 30 did not have all the tests positive. These tests included the Wassermann reaction in the blood and cerebro-spinal fluid, the globulin content and cell count of the fluid. A table is given of these cases showing the results of the different tests. Of these syphilitics, 201 were diagnosed clinically as paresis. In these the globulin test failed in 2 per cent., pleocytosis was absent in 10·5 per cent., the Wassermann reaction was negative in the serum in 7 per cent., and in the fluid in 4 per cent. The author draws attention to the possibility of positive findings without paresis during the primary and secondary stages of infection. It is therefore possible for a case to be one of dementia præcox in a syphilitic, or a case of paresis in the very early stages. The age of the patient may help in the differentiation. He considers that the extent of the parietic disease cannot be determined by laboratory tests. In a general way

the amount of globulin and pleocytosis are more marked in rapid cases. In making a diagnosis of recovery in a case of suspected paresis three possibilities have to be borne in mind—the case may be one of functional psychosis in the primary or secondary stages of syphilis; it may be a functional psychosis in the “pre-psychotic” stage of paresis; or it may be a remission in a true case of paresis. The first two are infrequent, the last by no means uncommon.

#### OBSERVATIONS ON CRANIAL ASYMMETRY.

For the past five years Dr. Adler, of the Juvenile Psychopathic Institute, Chicago, has been studying the question of cranial asymmetry, and now gives the results of his investigations of 1000 cases examined (*Amer. Journ. of Ins.*, July 1917, p. 89). At the outset he sets himself to define what he means by asymmetry, as he recognises that it is, except in the strictest sense, a relative term. As a result of exact measurements he finds that a divergence from the horizontal of 1 or 2 mm. in the level of the two eyes can be detected by inspection alone. He therefore limits his conclusions to such a divergence from the normal as can be readily recognised in this way. Exact measurements were, however, made and recorded. The measurements of the skull were made with a “conformateur”—an instrument not altogether trustworthy. The cranial outline thus obtained was plotted, and samples of these are given on a reduced scale. But the method of effecting the reduction is not stated, and the outlines are not at all like the ordinary full-sized cephalic shapes. In addition to the measures of the skull the mutual relations of various prominent points of the face were taken.

Of the 1000 cases examined, 719 had decided asymmetry, 281 had none. Of the former, 403 showed the left side of the face apparently larger than the right, 305 showed the reverse, while in 11 the asymmetry was irregular. A number of employees were also examined, but only 5 out of 86 showed any decided abnormality—less than 6 per cent. One conclusion he comes to is that the skull follows the development of the brain, and not *vice versa*. Tables are given of the mental disease of the patients, and the form of asymmetry found. Dementia præcox shows a very large percentage of asymmetry. The writer concludes that marked asymmetry indicates a tendency to psychopathy. The inequality in the great majority of cases is due to defective development on one side, but in a few it may be from excessive development, and be associated with unusual mental power. His measurements also led him to conclude that in right-handed people there is a noteworthy prominence in the right parietal region, and on the other side in those who are left-handed.



REPORT OF THE GENERAL BOARD OF CONTROL FOR SCOTLAND  
FOR THE YEAR 1916.

As in the previous year this Report is in an attenuated form compared with its pre-war proportions. It contains only 40 pages, the statistical tables and reports on the various institutions inspected by the Board being reduced to the smallest dimensions. The statistics are confined almost entirely to the admissions, discharges, deaths, and number of patients under care for the year. The total number under the official cognisance of the Board on 1st January 1917 was 18,885—a decrease for the year of 223. This is a continuation of the decrease reported the year before, but this, as stated, is probably due entirely to the present abnormal conditions. Under these special conditions one would expect a greater diminution among men than among women. So many men being away from the country, and those who become insane amongst these being in large part treated in hospitals for soldiers, one would expect a decided decrease in their number in asylums. There has been a decrease of 46 men in the number detained in asylums, lunatic wards of poorhouses, and private dwellings, while the decrease of women has been 135, compared with the previous year. The reasons for this disparity are obscure and difficult to trace.

The number of admissions during the year was 3435, which is 172 less than in 1915, and 320 less than in 1914. The number admitted for the first time was 2578. There was an increase of 131 in the number of private patients, and a decrease of 346 of paupers. There must, therefore, have been an increase of 43 in the number of those who had had previous attacks and required re-admission.

The recoveries were 1263, which is 95 less than in the preceding year. The deaths numbered 1762. This is less by 35 than in 1915. It is, however, 314 above the average of the ten years 1910 to 1914. The percentage death-rate on the average number resident was 11—the same as in the previous year.

The statistical tables usually issued with the Report have been compiled and are available should circumstances permit of their future publication.

As in all other establishments, the work of the Board itself, and of all the institutions inspected by it, has had to labour under serious handicap by the withdrawal of so many men for military service. That the work has been carried on without detriment to the interests of the patients, as is stated to be the case in the Report, is a matter for hearty congratulation.

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## THERAPEUTICS.

UNDER THE CHARGE OF

JOHN EASON, M.D.

## DIGITALIS AND CARDIAC THERAPEUTICS.

THE question of the exact mode of action of digitalis is one which recurs periodically, and is dealt with in several recent papers. Dr. F. Heim of Lausanne contributes a clinical paper to the *Revue Médicale de la Suisse Romande* of 20th July 1917. The observations were carried out on a large number of hospital cases. Heim alludes to the fact that most clinicians are at one in regard to the action of digitalis on cardiac systole and diastole, but are at variance as to its effect on blood-pressure. Diametrically opposed views are held on this point, and on this matter the author indicates that the blood-pressure depends on a good many factors, and that until these are determined it is useless to attribute to any medicament any apparent action thereon. He analyses with care a long series of cases, and comes to the conclusion that, on the whole, digitalis does not appear to have a decided action one way or another on blood-pressure, but that the latter is heightened and lowered by more or less fortuitous circumstances in each case. Reference is made to the wonderful effect of the drug in auricular fibrillation, but it is pointed out that the exact diagnosis of this depends on the ability to use the polygraph of Mackenzie or the electrocardiograph; and Heim is of opinion that for general purposes a readier method can be found to determine those cases which may be expected to benefit by digitalis. Numerous cardiac cases occur where digitalis fails to influence the heart, especially as regards rapid action and arrhythmia, and the author states that the clue to determine these unsatisfactory cases is to be sought in the existence or absence of œdema. He says that if the latter exists, the patient will experience benefit from digitalis, arrhythmia and tachycardia subsiding under its use, but if the case is a "dry" one, then benefit will not ensue. Here he cites the comparative uselessness of digitalis in paroxysmal tachycardia and febrile pulse acceleration. On the other hand, such "dry" cases may do well on general tonics and hygienic measures, more especially when special attention is given to the diet. The efficiency of the various digitalis preparations is reviewed, and all are stated to be of value in suitable types of disease, but Heim appears to lean towards Knoll's digipuratum. The author refers with commendation to strophanthus, but has nothing new to say regarding that substance.

Elsever, in the *New York State Journal of Medicine*, September 1917, discussing the drug treatment of heart disease, regards digitalis as not unsuitable where blood-pressure is high, if he wants to reduce the

frequency of a too rapid pulse. Rightly he holds that in aortic regurgitation digitalis is of service because of its effect in strengthening systole, and in improving capillary flow, and that by improving cardiac wall nutrition it restores compensation. He prefers the pharmacopœial preparations to any of the proprietary ones. The views expressed are those generally held, if one excepts the debatable use of the drug in arterial high pressure.

The *Medical Record* of 15th September 1917 contains an article by Dr. Gordiner on "Digitalis in Auricular Fibrillation." The signs of this condition, say, in mitral stenosis, are a very quick irregular radial pulse, which is out of relation in timing to the cardiac apex beat, disappearance of the presystolic murmur and thrill, and the appearance of a softer longer diastolic murmur—signs which can be verified by the polygraph or electrocardiograph. He says that no form of cardiac derangement is more amenable than this to digitalis handling, and points out that it acts by stimulating the medullary cardio-inhibitory centres of the vagus, by increasing the contractility of cardiac muscle, and that it delays conductivity through His' bundle. He grants that digitalis may increase blood-pressure, but that the usual medicinal doses are too small to attain this end. He urges that the drug be continued to be given till apex beat and radial pulse are synchronous to the finger, and about 70 per minute, or till some toxic symptom appears, such as vomiting, delayed conductivity, or bigeminal pulse. Danger naturally follows if the medicament is pushed further, and it would be wiser to discontinue the drug before toxic signs appear.

#### COLLOIDAL MERCURY IN SYPHILIS.

An exhaustive article is contained in *Arkiv för Inre Medicin* on this subject. It is the result of treatment of over 300 cases of recent and recurrent syphilis and a few cases of congenital syphilis under the care of Karl Heden. His experience, on the whole, has been such as to lead him to consider this form of mercury very serviceable in all stages of the disease, and he states the case very fairly for and against the "cure." Briefly stated, colloidal mercury usually established a negative Wassermann reaction and caused, in primary cases, a disappearance of the lesion in less than three weeks. The Wassermann reaction persisted in a few instances, especially in the congenital cases, but in certain latent instances of lues with positive Wassermann and no symptoms treatment was followed by disappearance of Wassermann. Three gravid women were delivered of children at full term free from signs of syphilis. The author admits that danger may lie in the setting up of stomatitis and nephritis by colloidal mercury, and cites a fatal case of each of these conditions. Curiously enough, he alludes to slight lung emboli in about 5 per cent. of the cases treated; none of them appear to have been fatal, and one wonders how the diagnosis was

arrived at. Speaking generally, the results attained appear to us to be very similar to those obtained by the "606" class of remedy.

#### SPECIFIC TREATMENT IN PULMONARY TUBERCULOSIS.

Gilbert T. Brown, in the *Therapeutic Gazette* of 15th May 1917, speaks enthusiastically of the results of the use of a watery extract of tubercle bacilli as prepared by Dr. Karl von Ruck of Ashville, N.C. The formula appeared in the *Therapeutic Gazette* for 1897, p. 388, and reference is directed thereto. Fifty-two cases were treated between 1904 and the present date, of which 22 were early, 13 were moderately advanced, and 17 quite advanced. As a result, 45 cases gained in weight, averaging 18 lbs. increase each; in 36 the temperature became and remained normal, 28 lost their cough, and from the sputum of 37 the bacilli disappeared. Of 8 presenting laryngeal tuberculosis one advanced case recovered completely, while two with marked laryngeal tubercle without ulceration recovered after treatment begun in 1907, and are still alive. One case complicated by tuberculous knee recovered from the pulmonary and articular manifestations, while two cases treated in 1906 and 1907 with lung, intestinal, and pelvic tubercle recovered completely and are still alive. Seven persons of the series did not yield to treatment and are dead, while three others, after improving, relapsed, and have died. Such results are exceptionally fine; indeed they are so uniformly good that one feels that it would be well to place alongside them the experience of others using the same method of treatment.

#### QUININE UREA HYDROCHLORIDE AS AN ESCHAROTIC.

This has been employed with success by Babcock, who writes in the *New York Medical Journal* of 3rd March 1917. Strong solutions of, say, 12 to 50 per cent.—usual strength about 30 per cent.—cause, after injection, a burning sensation and then anesthesia; later on the part becomes anæmic and then necroses, œdema occurring and the slough separating after a few days. Cavernous angioma, hemorrhoids, warts, urethral caruncle, and even small superficial epitheliomata have been so treated with good effect, and some of the successful cases had already failed under electricity and carbon dioxide snow. The affected area is infiltrated with a fine needle, care being taken not to inject too widely. A preliminary injection of cocaine will prevent the initial pain, but this is not necessary.

#### PITUITRIN AND EPINEPHRIN IN ASTHMA AND HAY FEVER.

Zueblin, in the *Medical Record* for 7th July 1917, places on record some of his experiences with these remedies. His patients were affected by the pollen of grasses and by certain flowers, and all of them had



at first cardiac dilatation, weak heart sounds, and low blood-pressure. Doses of 1 c.c. pituitrin and 0·5 c.c. liq. adrenalin hydrochlor. were given at intervals, with atropin occasionally between the doses. Marked benefit resulted, both as regards the dyspnoea and nasal symptoms and also as regards the cardiac manifestations, and the author draws the conclusion that in many of these cases one must look to the cardiac factor as well as to the apparent aeriaily borne irritant. He admits that his results in no way tell against the benefit which has been stated to follow the use of pollen vaccines, but maintains that such cases as present cardiac or vasomotor affections, as well as asthma and hay fever, do experience material benefit from adrenalin and pituitrin.

#### VITAMINES.

Fischer refers in the *Medical Record* for 7th July 1917 to the necessity for the inclusions of adequate amounts of vitamines in the food of children. Many of his remarks are not new, but he appends a useful list of substances containing these vitamines, viz. potatoes, spinach, carrots, beans, peas, fruit juices, such as orange, lime, grape, and pineapple; fresh milk and meat juice egg, and the outer coat of wheat oats and barley: natural dark cod-liver oil and butter fat, but not lard.

#### TARTAR EMETIC INTRAVENOUSLY IN MALARIA.

Since Leonard Rogers advised the use of tartar emetic in malaria against the crescents in subtertian infection, many observers have been employing this remedy. Two officers of the S.A.M.C.—Captain Orenstein and Lieutenant-Colonel Watkins-Pitchford—make a record of some cases they have handled in this manner (*Med. Journ. of South Africa* for April 1917). Doses of 0·04 to 0·2 grm. were employed, and it is shown that when by accident the injections were made into connective tissue around the veins there occurred severe inflammation and necrosis of this tissue. No evil effects followed a proper technique. Success was obtained, in that the crescents disappeared speedily from the blood, while in some instances broken-up forms were detected in the films. The observers remark that none of the cases discharged as cured returned for advice, and they feel satisfied that the method of treatment is effective.

#### GALYL IN SYPHILIS.

A contribution to the clinical value of galyl in syphilis is to be found in *Le Progrès Médical* for 6th October 1917 (Dr. Paul Richard). He advises doses of 0·2 grm. intravenously, and insists on careful injection into the veins, as the drug exercises a severe inflammation-causing effect on the perivenous tissue, which may necrose and leave an ulcer, taking even three months to heal. Diarrhoea and vomiting have occurred as complications in some of his cases, but the author



shows that the results on chancres are excellent, healing taking place in about twelve days, while even phagedenic cases have healed in thirty days. Secondary symptoms speedily vanished under injections, and where the hair was falling out this process ceased after a second injection. Grey oil or mercury cyanide was used with galyol, and both were well borne by the patients.

## OPHTHALMOLOGY.

UNDER THE CHARGE OF

W. G. SYM, M.D., F.R.C.S., AND ANGUS MacGILLIVRAY,  
M.D., D.Sc.

### WELFARE OF THE BLIND.

THE Report of the Departmental Committee on the Welfare of the Blind (1917) will be found to be a document of much interest and value. The terms of reference were "to consider the present condition of the blind in the United Kingdom and the means available for (a) their industrial or professional training, and (b) their assistance, and to make recommendations."

A primary question which occupied the attention of the Committee was the apparently elementary one of the definition of blindness. Up to this time the only definition appears to have been that employed in the Elementary Education (Blind and Deaf Children) Act, 1893, viz.: "In this Act the expression 'blind' means too blind to be able to read the ordinary school books used by children." This definition, as was indicated by the Committee appointed (at the request of the L. G. B. Departmental Committee) by the Ophthalmology Section of the Royal Society of Medicine, is in practice quite satisfactory as applied to children. For the adult the phrase should run—"too blind to perform work for which eyesight is essential." The Ophthalmology Committee pointed out further—among a number of valuable practical considerations—the necessity for periodical revision of any certificate of blindness, lest the inability to see should be feigned or exaggerated, or no longer operative. They illustrate the necessity for such care by means of three examples of actual deceit, one of which was to the effect that a young man with imperfect sight obtained a pass permitting him to travel by tramcar free of charge; this pass was given to him by a non-medical official of a society for the blind. He was, however, found to be in the habit of riding a bicycle to the place where he joined the tramcar! The same Committee considered with care the question whether assistance should not be withheld from those who deliberately maintain their blindness by refusing to undergo treatment (*e.g.* extraction of cataract), or to refrain from such indulgence as excessive smoking; the reward of 10s. per week for life might be an important factor

in such refusal. The Committee was of opinion that unreasonable refusal to take measures for recovery of sight ought to be a bar precluding the person so acting from enjoying the provisions of the Act.

As regards the very interesting and important point of statistics, it appears that the census paper in England and Scotland limits the word "blindness" to total blindness; thus it is probable that many cases of persons "economically blind" are on this ground omitted from the schedule. In Ireland a different procedure is adopted: the census paper contains an inquiry as to whether the person is "blind"; should he be so, a second form is sent in inquiring as to age, incidence, probable cause, etc., etc., and the degree.

The census returns for 1911 indicates that the number of persons totally blind is in all 33,965 (in England 26,336, in Ireland 4312, in Scotland 3317), the males being very slightly in absolute excess over the females, and the proportions to population being in Ireland 1 in 1018, in England 1 in 1370, and in Scotland 1 in 1435. It is pleasing to observe that Scotland thus occupies the best place of the three. A further comparison between the figures for 1901 and 1911 shows that though the total number of blind has increased, the proportion of blind to population has actually fallen, except in Ireland; thus in Scotland in 1901 the number was 3252 and in 1911 it was 3317, but in the same period the ratio to the population has fallen from 1 in 1376 to 1 in 1435. A curious point in comparison of the two periods is that from 1901 to 1911 there has been an increase of ninety-two women and a decrease of twenty-eight men.

The higher proportion of blind in Ireland has been attributed to the greater emigration, which, of course, diminishes the numbers of the healthy, for the blind are not accepted as immigrants and tend to swell the numbers at home. One statement occurs in the report in reference to Ireland which would require explanation from an expert theologian, viz. that of the blind, 3371 were Roman Catholics, 538 Protestants, and 318 Presbyterians.

It appears probable that in the United Kingdom there are about 3000 blind persons occupied in workshops and institutions, and it is further probable that there are about 3000 more included under the head of "unoccupied" who are quite capable of instruction and employment: there are not less than 10,000 blind persons incapable of employment of any useful kind.

A very important question is the age at which persons become blind, but, unfortunately, statistics at present available are not clear on this point; it is, however, probable that about 60 per cent. become blind after thirty years of age. As to causes, if we take Great Britain alone, for convenience sake, we find 1641 cases attributed to congenital and infantile causes, 245 to measles and other diseases of childhood,

839 to disease not specially connected with the eye, 3289 to cataract, optic neuritis, or other eye trouble, and 1229 to accident, while 3210 are "unspecified."

Everyone knows the fact that ophthalmia neonatorum is a very dangerous affection: to it one expert attributed about 10 per cent of the cases of blindness, and further stated that he doubted if there had been any diminution in its occurrence in the last twenty five years. Dr. Dewar, in his evidence as regards Scotland, found from statistics that the proportion was rather above 10 per cent., but was of opinion that nowadays cases rarely result in complete blindness, though the frequency of its occurrence does not appear to be falling. Now that the disease is compulsorily notifiable in England and partially in Scotland, great hopes are expressed that it will become a less serious menace to the welfare of the people. In Ireland, as is perhaps not very generally known, this disease is, for various reasons, much less frequent. In lying-in hospitals, as Lawford stated in his evidence before the Committee, the disease is well nigh eliminated, whereas formerly it had been very prevalent in these institutions. The Committee speak very highly of the methods adopted in Liverpool for the prompt and efficient dealing with any case of the disease: the system briefly is that, so soon as a case is notified, a trained nurse or health visitor is sent at once to investigate and to see that proper treatment is carried out. Whenever possible, both mother and child are admitted to hospital, where constant attention and supervision can be ensured, and it is found that this procedure is a notable element in helping to bring about a thorough and early cure. In 1912, 329 cases came under the notice of the Liverpool authorities, and in all these cases, except one, sight was saved: this is a splendid record. The Committee urge in this connection (*a*) compulsory notification; (*b*) enlistment of the help of the child welfare organisation in securing prompt and effective treatment and supervision; (*c*) hospital accommodation; (*d*) amendment of instructions to midwives. (In regard to this last point it appears as though the Committee had been unwittingly misled by one of the witnesses as to the precise nature of the instructions given to midwives under the charge of the Central Midwives' Board, whose rules are in reality more in consonance with the best teaching than the Committee was led to suppose.)

In respect of occupational blindness, the Committee express the opinion that much good might be done by the compulsory wearing of protecting goggles, as is done in the case of the aerated water bottlers: but even when good and suitable goggles are provided (which is by no means always the case) there is sometimes strong, if unreasoning, opposition on the part of the employees. According to Dr. Collis, about 5 per cent. of all injuries reported by certifying factory surgeons in England as occurring in factories and workshops are eye accidents.



Evidence was brought forward showing that in certain occupations injuries are very frequent. Thus among the granite workers in Aberdeen one in every two has sought advice each year, and the injuries they receive are very prone to lead to serious interference with sight.

The question of the mode of employment of the blind (after they have become blind, not—in the meantime—their previous occupation) is naturally one of much importance also. The number of such persons whose occupations are specified is 8693 in the United Kingdom: the English census shows that the proportion of males returned as occupied was 346 per 1000 in 1911 as against 372 in 1901—rather a singular drop. The number employed in workshops in the United Kingdom may be regarded as between 2600 and 3000.

I propose to bring forward at a later date some further points brought into prominence by this most useful Committee.

W. G. S.

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## NEW BOOKS.

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*Clinical Tuberculosis.* By FRANCIS MARION POTTENGER, A.M., M.D., LL.D. With a Chapter on Laboratory Methods by JOSEPH ELBERT POTTENGER, A.B., M.D. Two Volumes. Pp. 1500. With 111 Illustrations. London: Henry Kimpton. 1917. Price £3, 3s.

THESE two bulky volumes are the outcome of the author's prolonged experience in the care and treatment of tuberculosis in California. Dr. Pottenger has observed and thought much regarding the disease. The fifty chapters which constitute the work contain interesting discussions of many sides of the subject.

The author rightly urges that many existing expositions of tuberculosis have too limited an outlook on its extent and significance. He presses for the larger view—happily long taught in some of our schools, and now, let us hope, coming to be more generally adopted—of tuberculosis as an infective disease, which, in addition to local lesions, produces systemic disturbance, registered by a great variety of clinical manifestations worthy of close scientific consideration. The local lesions and the expressions of systemic disturbance are examined at length.

The resulting collection of "monographs," as the author describes them, is a little discursive and perhaps might be reduced in extent, with advantage both to the subject and to the reader. A number of collateral matters have been introduced into the text. These give rather an impression of overloading and even indigestion, tending to detract from much that is excellent in the remainder. A good deal



might be better left to treatises on physiology and pharmacology, while the more strictly tuberculous aspects might be further unfolded. For example, in relation to the nervous system, we could have spared some of the more lengthy citations of physiological facts and theories, and should have welcomed a fuller representation of psychoneuroses and other nerve lesions occurring in tuberculosis. With judicious editing the 1500 pages might be reduced by one-third and the immediate value of the work—from the point of view of tuberculosis—be enhanced. The author may perhaps keep this in mind in further issues.

Incidentally we may note that names of authorities are, in some cases, incorrectly cited, *e.g.* Noel Paton and Philip, whose names are wrongly spelt. The book is well printed and abundantly illustrated.

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*Collected Papers of the Mayo Clinic, Rochester, Minnesota.* Edited by Mrs. M. H. MELLISH. Vol. VIII. 1916. Pp. xii. + 1014. With 411 Illustrations. Philadelphia and London: W. B. Saunders Co. 1917. Price \$6.50.

THE sustained activity of the staff of the Mayo Clinic is abundantly proved by the latest issue of the collected papers, again presented under the able editorship of Mrs. M. H. Mellish. The regional arrangement of the subject-matter has been adhered to, and, as usual, the surgery of the alimentary canal takes the most prominent place. The papers on the surgery of the gall-bladder and bile-ducts are of particular value and interest, that on the relative merits of cholecystostomy and cholecystectomy by Chas. H. Mayo calling for special mention. The surgery of the spleen is gradually taking a more prominent place, and several valuable contributions to the subject are included in the section dealing with the ductless glands. A special section is devoted to questions relating to technique, and the volume closes with a series of papers of varying value on matters of general interest.

An eloquent appreciation of John B. Murphy is contributed by William J. Mayo, and an obituary notice of Dr. Emil H. Beckman, whose papers on the surgery of the nervous system are not the least valuable contributions to the present volume, is included.

Large as this volume of the series is, the editor intimates that a number of papers read and published by the staff of the Mayo Clinic in 1916 have been held over, and several of those included have been presented in the form of abstracts.

The publishers' share in the production of the volume as usual leaves nothing to be desired.

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*The Treatment of War Wounds.* By W. W. KEEN, M.D., Ph.D., Philadelphia. Pp. 169. With 22 Illustrations. Philadelphia and London: W. B. Saunders Co. 1917. Price \$1.75.

THIS small work takes the form of a report made by the writer at the request of the National Research Council, and especially of its Medical Committee, and seems designed to put them *en rapport* with the present position of war surgery at the front.

The author admits that his knowledge is necessarily second-hand, as he has not been able to visit the hospitals in Europe; but his personal experience in the American Civil War (which he frequently quotes), his careful reading of current French and British literature, and a wide correspondence with American surgeons who have served in the present war, have enabled him to give a useful sketch of what has been and is being done to improve wound treatment.

This summary contains nothing that is new to British readers, but it should prove useful to the medical officers of the American Army who have still to experience the conditions of active warfare, and to adapt their practice to the unfamiliar conditions with which they will be confronted.

Dr. Keen has quoted liberally from papers and books recently published and from official publications of the British War Office, and, in so far as he deals with actual achievements, he is quite reliable as a guide. His optimistic prophecies regarding certain much-advertised antiseptic agents, which have not yet stood the test of time and experience, must be received with greater caution.

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*The Treatment of Emergencies.* By HUBLEY R. OWEN, M.D., Philadelphia. Pp. 350. With 249 Illustrations. Philadelphia and London: W. B. Saunders Co. 1917. Price \$2 net.

THIS book has grown out of a series of lectures delivered by the author to the policemen and firemen of Philadelphia and to nurses at the hospitals to which he is attached. It aims at being something more than a guide to first aid, and is addressed to the instructors of ambulance corps, rather than to pupils, and to resident physicians, nurses, and "those laymen who wish to make a more comprehensive study of the subject." In thus casting his net widely, the author incurs the criticism which in his preface he anticipates—that the book is too technical for the layman, and too elementary for the well-trained doctor.

As an exposition of the principles underlying the practice of first-aid work it is excellent, and will prove useful to junior house-surgeons and nurses. On matters of diagnosis and treatment, however, it goes some distance beyond what is asked of members of a non-professional ambulance corps. The removal of foreign bodies from compound

fractures and the introduction of sterile gauze wick do not belong to first-aid treatment, nor is the Pasteur treatment of a person bitten by a mad dog a necessary part of the instruction of a policeman.

When the author is dealing with such subjects as properly come under the heading of first aid, his descriptions are excellent, *e.g.* the control of hæmorrhage, the treatment of asphyxiation, rescue from drowning or of persons in a burning house, poisoning, and transportation. The chapter on bandaging is well written and clearly illustrated by a series of first-class photographs.

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*The Principles of Rational Education.* By CHARLES A. MERCIER, M.D., F.R.C.P., F.R.C.S. Pp. xi. + 87. London: The Mental Culture Enterprise. Price 2s. 9d. net.

SOME months ago, when the *Times* was publishing a number of letters on the subject of education, and more particularly on the need for science being given a more prominent place in our school and college curricula, Dr Charles Mercier added to the correspondence a welcome protest against the current nonsense that is widely talked and printed about this question. Numbers of good people, suddenly awaking to the fact that the school system of this country, unchanged in broad principles for generations, no longer meets all the needs of the future citizen, promptly lay the blame at the door of the classics, which certainly do form its main foundations. Very likely they are right, but with little more ado they proceed no less promptly to raise up, in the place of the discredited classic idol, a rather nebulous figure labelled Science, and, without pausing to seek a *deu media*, proclaim her loudly as the healer of all our woes. We are not sure whether they are more stimulated by a pure zeal for science and education or by the memory of the aniline dye disclosures.

Dr. Mercier, however, while duly sympathetic with the advancement of science in the national education, is more anxious that reformers should see clearly what manner of national *kultur* they wish to fashion. His book contains a vigorous statement of the aims of education, followed up by chapters on the cultivation of the inborn faculties of the child, and on the imparting of knowledge. Here and there are a few somewhat hasty and facile generalisations which serve to remind the reader that the author holds a prosecuting brief against traditional ideas in education; but there is no doubt that if clarity and conciseness of style are any guide, Dr. Mercier has indeed, in his own words, "suffered but little from the disadvantage of a Public School and University education."

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*Massage: Its Principles and Practice.* By JAMES B. MENNELL, M.A., M.D., B.C.(Cantab.). Pp. xvi. + 359. With 135 Illustrations. London: J. & A. Churchill. 1917. Price 8s. 6d. net.

AMONG the many works on massage that have recently appeared this volume has a place of its own. The author, who is the civilian medical officer in charge of the massage department in the Military Orthopedic Hospital at Shepherd's Bush, is already well known through his work on the treatment of fractures by massage and movement. He was, if not one of the earliest, at least one of the most enthusiastic, disciples of the late Lucas Championnière, and did much to establish the principles of the great French surgeon in the English (as distinguished from the Scottish) schools of surgery. Many of the views he puts forward are admittedly unorthodox, but they are none the less wholesome. His main purposes are to expound the rationale of massage treatment to the masseur, and to impress upon the surgeon the importance of giving definite and detailed instructions to the masseur when he hands over a patient for treatment by massage. "He should consider the prescription of massage in the same light as he would consider that of a potent drug, and watch its effect no less closely, varying the dose and the nature of the dose from time to time according to indications." This seems to us sound and much-needed advice.

The chapters on the general principles of massage treatment and those on the movements of massage are admirably clear, the simple English nomenclature removing much of the mystery and confusion attaching to the conventional French terms.

Full consideration is given to the importance of mobilisation as a sequel to massage treatment, and the use of apparatus is described and illustrated by a series of photographs.

Space forbids that we should follow the author through the detailed and eminently practical description of the treatment of individual injuries and diseased conditions by massage; suffice it to say that these sections of the work are full of instruction and reflect the author's wide experience and balanced judgment.

The value of the work is greatly enhanced by the illustrations.

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*Surgical Nursing and After-Treatment.* By H. C. RUTHERFORD DARLING, M.D. Pp. xii. + 582. With 129 Illustrations. London: J. & A. Churchill. 1917. Price 8s. 6d. net.

THIS new volume, based by its author on the syllabus of the Australian Trained Nurses' Association, will prove a distinct acquisition to the literature specially intended for the theatre assistant and the nurse. It is written in a clear, simple style, in two sections, the first dealing systematically with general, and the second with regional surgical, nursing. Each of the thirty-two chapters is prefaced by a comprehen-



sive synopsis, which gives a pleasing sense of the ultimate close interrelation of the subjects to be covered. The early chapters afford a very welcome and readable summary of information on such points as infection, suppuration, rigors, immunity, tumours, sepsis, gangrene, tetanus, venereal conditions, burns, tuberculosis, etc., before proceeding to the more purely surgical side of the subject.

While, as the author says, an ounce of practice is worth a pound of theory, there also exists that useful mean of combination of practice with theory which applies most suitably to a book of this kind. A preliminary perusal of the relevant chapter is followed by observing the practical application, and, while the salient points are still fresh in the mind, a second and more critical revision of the same ground is made. From the subsequent practical gain this second reading is invaluable, and taken thus, the book will be found a reliable help. A few of the illustrations are capable of improvement.

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*Food Poisoning.* By EDWIN OAKES JORDAN. Pp. viii. + 112. Illinois: The University of Chicago Press. 1917. Price 4s.

WHILE this is a small volume compared with others that have dealt with the question of food poisoning, it is none the less most informative. It is fully and admirably illustrated and excellently arranged. The subjects discussed are: Extent of food poisoning; various kinds of food poisoning; articles of food most commonly connected with food poisoning; causes of food poisoning; and, lastly, prevention of food poisoning. The treatment under each heading is very well done, and numerous tables as well as quoted outbreaks aid in convincing the reader as to the facts. A particularly interesting chapter deals with poisoning of unknown nature. It is suggestive, and proves that much investigation is still called for in the solution of what are now and again the causes of obscure outbreaks of disease. Every officer of health will profit by studying this up-to-date book.

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## NEW EDITIONS.

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*Tumours, Innocent and Malignant: their Clinical Characters and Appropriate Treatment.* By Sir JOHN BLAND SUTTON, Surgeon to the Middlesex Hospital. Sixth Edition. Pp. 790. 383 Illustrations. London and New York: Cassell & Co. 1917. Price 21s. net.

BLAND-SUTTON'S work on *Tumours* is one of those rare books which, although dealing scientifically with a scientific subject, is read with pleasure and profit by all sorts and conditions of medical men. Such

testimony is as unusual as it is thoroughly deserved. The reader insensibly acquires information from the wealth of accumulated facts which the book contains, and at the same time is fascinated by the manner of their presentment. The outstanding merits of the work are as noticeable to-day as they were a quarter of a century ago, when the first edition saw the light. It is insisted upon that a knowledge of the pathology of malignant tumours is essential for the operating surgeon. Another attractive feature is the practice of illustrating the nature of tumours by frequent references to comparative pathology—a pet subject of the author and one in which he has had unique opportunities for investigation through his connection with the Zoological Society of London, and the collection of animals under its charge in Regent's Park.

In this edition many chapters have been re-written and others have been expanded. Three are new. All have received emendations, and the whole has been embellished with eighty new wood engravings. The section on cancer has been extended. The manner in which pathogenic micro-organisms increase the life-destroying propensities of cancer is duly emphasised.

It remains to be said that while it may not be always possible to agree with the views of the author regarding the nature and etiology of tumours, no one will deny that he has contributed in no small degree to the advancement of our knowledge of this difficult subject, with which, we venture to hope, his name will always be honourably associated.

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*Diagnostic Symptoms in Nervous Diseases.* By EDWARD LIVINGSTON HUNT. Second Edition. Pp. 292. Philadelphia and London: W. B. Saunders Co. 1917. Price \$2 net.

THE demand for this book came from the author's students at Columbia University, and was such that a second edition was called for. The book may be described as a glossary of neurological terms, a brief description of individual signs and symptoms, and an enumeration of the conditions in which these occur. We cannot say that in our opinion it is well adapted to the student. In the first place, the exhaustive system of case-taking advocated by the author, which covers ten pages of small print, although no doubt admirable from the theoretical stand-point, is, we venture to think, too elaborate for practical application. Again, we cannot help thinking that, to mention one example of many similar instances, the inclusion of such diseases as tabes, general paralysis, and myasthenia gravis in a list of twenty-five conditions in which vertigo may occur will mislead the student, who will probably conclude that vertigo is a characteristic symptom of, or of frequent occurrence in, the diseases mentioned. As

a frontispiece to the book the author reproduces a full-page photograph entitled "Foot in Friedreich's Ataxia." The illustration as such is all that can be desired, but why accord to this figure such prominence, for, as Déjerine long ago pointed out, the deformity of the foot often met with in this very rare disease is by no means pathognomonic. It is this want of perspective which seems to us to call for criticism. Artificial aids to the memory may have their value, but the aim of the student should be to visualise his clinical experience, and when the author feels it necessary in referring to a sign so common as the Argyll-Robertson pupil to make the following statement: "To impress this, remember the two last letters of the word Argyll (ll), meaning loss of light reflex, and the two first letters (ar), meaning accommodation retained," we cannot help feeling that there is something defective in his method of teaching. Further, there are many statements throughout the book to which exception might be taken; for example, "The way to test for the symptom (Argyll-Robertson pupil) is to have the patient look at a fixed object, shade the eye to be examined, and then suddenly admit light to the pupil." Again, in a list of ten conditions in which this sign occurs as a symptom, disseminated sclerosis, cerebral softening and atrophy, hydrocephalus, and progressive muscular atrophy are included. We do not feel, for the reasons above stated, that we can commend the book to medical students and practitioners.

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*Hygiene and Public Health.* By Dr. LOUIS C. PARKES and Dr. H. R. KENWOOD. 6th Edition. Pp. xii. + 787. London: H. K. Lewis & Co., Ltd. 1917. Price 14s. net.

THE appearance of a sixth edition generally speaks for itself. In this case there is no exception to the rule. Every teacher and numberless students have valued the book under review. It is readable, accurate, and always well abreast of modern teaching and thought. New books may come and others may go, but Parkes and Kenwood, as a standard volume, will likely continue to hold its deservedly high place among those who appreciate a reliable text-book. A great deal has been done to bring the subject of epidemiology up to date, and one is glad to observe the full treatment of the subjects of venereal diseases, child welfare, and school hygiene. Here and there new illustrations have been added, and the section on sanitary law is very complete for such a work. But why do the authors studiously fight shy of the Public Health (Scotland) Act, 1897? It would materially enhance the value of their text-book if the authors would cater for the many students in Scotland who seek to qualify for the Diploma in Public Health.

*Hygiene and Public Health.* By Sir ARTHUR WHITELEGGE, K.C.B., and Sir GEORGE NEWMAN, M.D., F.R.S.E. Thirteenth Edition. Pp. xix. + 762. With 77 Illustrations. London: Cassell & Co. 1917. Price 10s. 6d. net.

SIR GEORGE NEWMAN has done the revision of this well-known manual, which now appears in its thirteenth edition. To have attained so great a publicity indicates that the work has not only merited but has demanded success. Though large additions have been made, careful pruning has kept the volume within bounds, it being only some thirty pages larger than the preceding edition. The chapter dealing with schools and school hygiene is particularly well written, and the new chapter on military and naval hygiene will prove most acceptable to medical men now on active service, though one would hope that after the present world war is finished its inclusion will no longer be necessary.

Naturally, the largest part of the volume is devoted to infection, infectious diseases, and disinfection. The subject of immunity is well treated, and we are glad to see that the authors devote considerable space to the relation of vaccination to smallpox. Sanitary laws are succinctly though adequately dealt with, and we have every confidence in recommending the work to medical students as well as to practitioners.

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## NOTES ON BOOKS.

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TRANSACTIONS, REPORTS, ETC.—The thirty-eighth volume (third series) of the *Transactions of the College of Physicians of Philadelphia* (printed for the College) contains the papers read before the College during the year 1916. The various communications are commendably short and to the point, and the *précis* of the discussions appended add greatly to their value. Dr. Deaver gives an admirably clear description of removal of the gall-bladder, an operation which at present is having rather a vogue in America. Dr. H. C. Wood, jun., deals with the uselessness of some widely employed drugs in a forcible common-sense manner. To habit, superstition, and the hypnotic effect of persistent advertising he attributes the continued use of such drugs as "compound syrup of the hypophosphites," lead and opium fomentations, morphia suppositories and other local applications of opium, Basham's mixture (ammonium acetate with iron chloride) in Bright's disease, lithia in gout, and aromatic spirits of ammonia given by the mouth in shock. Dr. George G. Ross and Dr. Bernhard Menecke utter a much-needed warning against attaching too much importance to certain peritoneal adhesions, veils, and kinks.



There is an interesting discussion on the value of military training conducted while the "preparedness" campaign was in full swing in America. The "riot of individualism" amongst American citizens, of which one speaker complained, has since given place to something very different. The volume contains much valuable material.

The *Transactions* of the seventh annual meeting of the American Association for Study and Prevention of Infant Mortality, held at Milwaukee in October 1916, contains many papers of special interest at the present time, when the subject of child welfare has at last come so prominently in this country under public notice and various municipal schemes are in process of evolution.

Of special interest are communications dealing with the epidemic of poliomyelitis in greater New York in 1916.

In all 19,000 cases occurred between the beginning of June and the end of September, and the death-rate was about 25 per cent. In New York City for the first nine months of the year there were, however, 1022 fewer deaths under one year of age than for the same period of the former year, this being ascribed to fear on the part of the mothers and consequently the development of a universally receptive state of mind with regard to instruction in child welfare.

The present volume of the *Transactions of the Thirty-eighth Annual Meeting of the American Laryngological Association*, 1916 (New York, McConnell Press), is well up to the mark of its predecessors. The first paper, by Thomas R. French, describes the tonsilloscope—an instrument devised by the writer for the exploration of the interior of the tonsils *in situ*. All specialists are aware of the great difficulty of deciding in certain cases as to the necessity or otherwise of enucleating the tonsils, and French's appliance, which is constructed on the principle of the transillumination apparatus employed in the investigation of nasal accessory sinus disease, promises to afford valuable help in settling this difficult problem. Other notable contributions include that of Goodale on the vasomotor disturbances of the upper air-passages, of Grayson on the pathogenesis of the nasal neuroses, of Fetterolf on vagotonia originating in the nasal accessory sinuses, of Lynch on his method of suspension laryngoscopy, of Chevalier Jackson on bronchoscopy for epithelioma, and of Sluder on the upper paranasal cells. The volume includes an obituary notice of the late William Lincoln Ballenger, whose name is widely known, not only in America but also in Europe, as that of a man who has done much to advance his specialty.

## BOOKS RECEIVED.

- DARLING, H. C. R. *Elementary Hygiene for Nurses* . . . . . (J. & A. Churchill) 3s.  
 DESHUMBERT, M. *An Ethical System Based on the Laws of Nature* . . . . . (Open Court Publishing Co.) 2s. 6d.  
 ENCYCLOPÆDIA Medica. Second Edition. Vol. V.—*Filix Mas to Heart*. Edited by J. W. Ballantyne . . . . . (W. Green & Son, Ltd.) 20s.  
 FORTIETH Annual Report of the Department of Health of the State of New Jersey, 1916 . . . . . (State Gazette Publishing Co.) —  
 GODLEE, SIR RICKMAN J. *Lord Lister* . . . . . (Macmillan & Co., Ltd.) 18s.  
 GRAY, ALBERT A. *Otosclerosis (Idiopathic Degenerative Deafness)* . . . . . (H. K. Lewis & Co., Ltd.) 12s. 6d.  
 JUNG, C. G. *Collected Papers on Analytical Psychology*. Second Edition . . . . . (Bailliere, Tindall & Cox) 15s.  
 KNOX, ROBERT. *Radiography and Radio-Therapeutics*. Vol. I. Second Edition . . . . . (A. & C. Black, Ltd.) 30s.  
 KREHL, LUDOLPH. *The Basis of Symptoms* . . . . . (J. B. Lippincott Co.) 21s.  
 LAMB, W. *Diseases of the Throat, Nose, and Ear*. Fourth Edition . . . . . (Bailliere, Tindall & Cox) 8s. 6d.  
 LUCAS, KEITH. *The Condition of the Nervous Impulse* . . . . . (Longmans, Green & Co.) 5s.  
 LUYS, GEORGE. *A Text-Book on Gonorrhœa*. Second Edition . . . . . (Bailliere, Tindall & Cox) 21s.  
 MANSON, SIR PATRICK. *Tropical Diseases*. Sixth Edition . . . . . (Cassell & Co., Ltd.) 16s.  
 MARTIN, E., B. A. THOMAS, and S. W. MOORHEAD. *Genito-Urinary Surgery and Venereal Diseases* . . . . . (J. B. Lippincott Co.) 30s.  
 MARTINIER, P., and G. LEMERLE. *Injuries of the Face and Jaw* . . . . . (Bailliere, Tindall & Cox) 5s.  
 MEMORANDA on Army General Hospital Administration. Various Authors . . . . . (Bailliere, Tindall & Cox) 5s.  
 ST. LUKE'S Hospital Medical and Surgical Reports. Vol. IV., 1917 . . . . . (Press Publishing Co.) —  
 TINEL, J. *Nerve Wounds* . . . . . (Bailliere, Tindall & Cox) 15s.  
 TODD, ALAN H. *Surgical After-Treatment*. Second Edition . . . . . (Edward Arnold) 4s. 6d.  
 TORIKATA, R. *Koktoprazipitinogene und Koktoimmunogene* . . . . . (Williams & Norquie) 21s.  
 WADDINGTON, VERA. *What Every Masseuse Should Know* . . . . . (Methuen & Co., Ltd.) 2s. 6d.  
 WATSON, CHALMERS. *Lectures on Medicine* . . . . . (E. & S. Livingstone) 4s. 6d.  
 WATSON, J. K. *The Venereal Diseases Problem* . . . . . (Bailliere, Tindall & Cox) 2s. 6d.  
 YOUNGER, E. G. *Insanity in Everyday Practice*. Fourth Edition . . . . . (Bailliere, Tindall & Cox) 5s.

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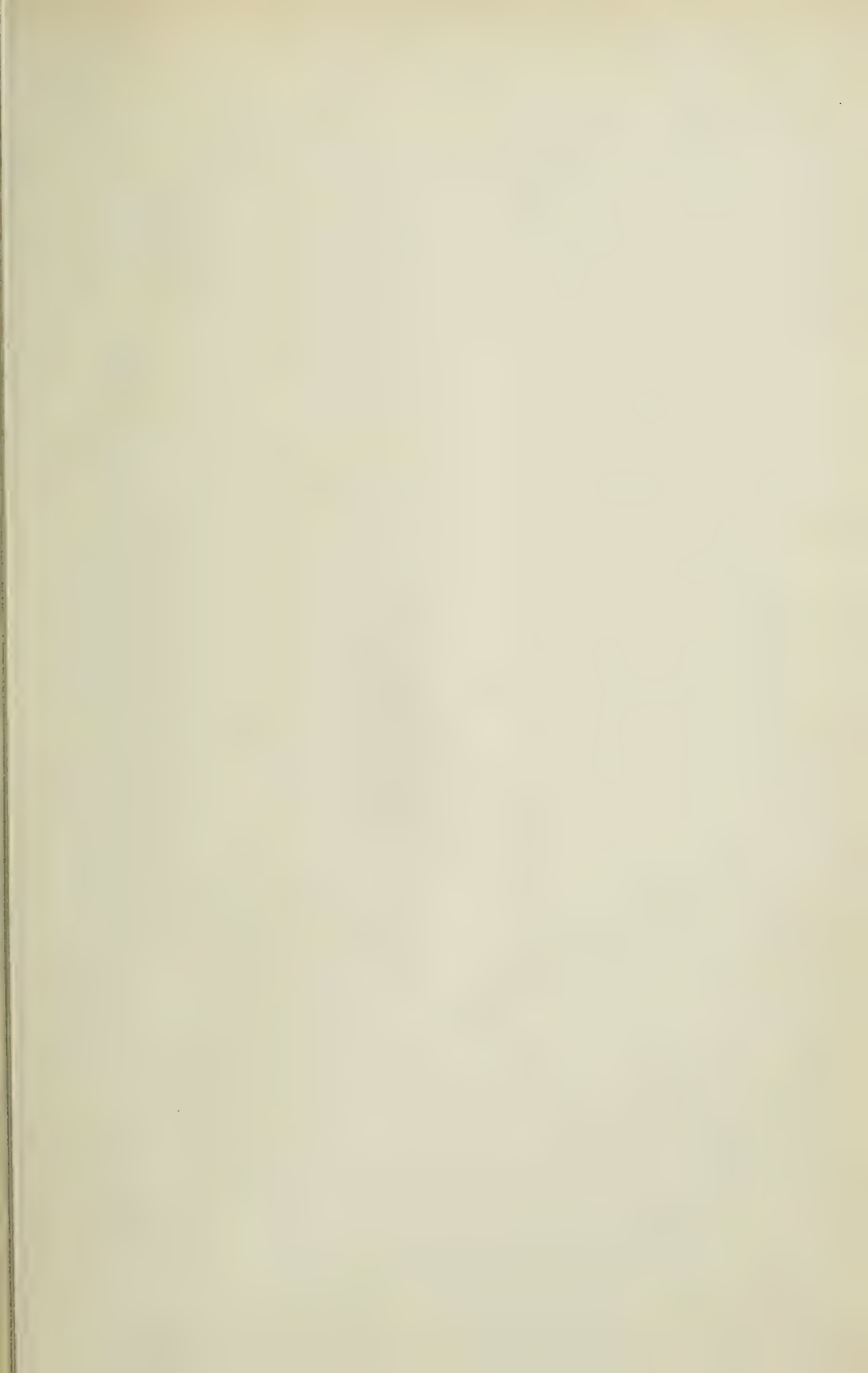
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# EDINBURGH MEDICAL JOURNAL



EDITED BY  
ALEXANDER MILES & J. S. FOWLER

**Founded 1805.**

**JULY 1917.**

**New Series, Vol. XIX. No. 1.**

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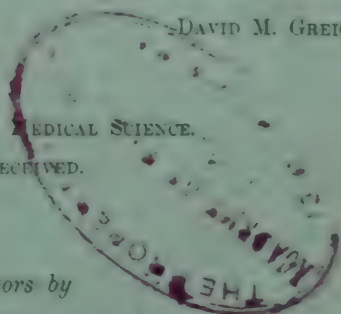
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In the Treatment of Neuralgia and Myalgic Pains Antikamnia Tablets are not only palliative, but along with other measures, assist in ultimate cures; they also have a field of use in Rheumatic and Gouty Affections. In Neurasthenia, Hysteria, and Migraine they are a valuable adjuvant to the other recognised therapeutic measures.

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